SAMSUNG

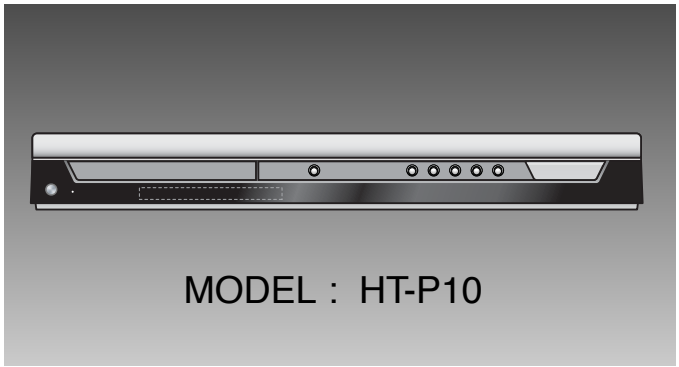
DVD RECEIVER AMP

BASIC MODEL: HT-P10/ P11
HT-BP10
HT-RP16
HT-TP12

* Application Model:
  HT-P10R/EDC,ELS,XFO
  HT-P10T/FAL,XAP,XFA,XSG
  HT-P11T/XFA
  HT-RP16/XEU, HT-TP12R/XFO

SERVICE Manual

DVD RECEIVER AMP SYSTEM



MODEL : HT-P10

Features

* **Multi-Disc Playback & FM Tuner**
* **Dolby Pro Logic II**
* **DTS (Digital Theater Systems)**
* **TV Screen Saver Function**
* **Customized TV Screen Display**

- Confidential -

Notice !! **You can search for the updated part code through ITSELF web site.**
URL; http://itself.sec.samsung.co.kr

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1. Definition of Home Theater

What is Home Theater?

Home theater system is the proper combination of audio and video system at home which enable you to enjoy more dynamic sound and vivid image in a wide screen of movie theater.

This effect can be implemented with wide screen, high quality projector, Dolby digital and DTS sound effects.

Now you can enjoy surround sound field wieh realistic presence and Dolby digital at your home as if you are in a movie theater.

As time goes by, home theater system has become recognized as a system that helps listen sound closer to the original sound rather than video. In this 21st century, most movie and animation films will be produced for home theater and reproduce sound closer to original sound.

2. Concept of Sound

What is Sound Range?

People can listen to the sounds with frequency between 200Hz~20.000Hz

High	3,000Hz~20,000Hz	Highest sound (Ex– Woman's screaming, high sound of organ)
Middle	200Hz~3,000Hz	Most common sound in our daily lives (Ex– movie words, music)
Low	20Hz~200Hz	Lowest sound range that human can listen to (Ex– explosion sound, strong drum sound)

As time goes by, home theater system has become recognized as a system that helps listen sound closer to the original sound rather than video. In this 21st century, most movie and animation films will be produced for home theater and reproduce sound closer to original sound.

What is Sound Pressure?

* A measure of how well speaker converts electric signal it receives to sound
* Unit of sound pressure is decibel and mainly measures the size of sound at 1 m away after sending 1 W power from speaker.
  ❋ High sound pressure doesn't necessary mean good performance

What is Timbre?

* How well the unique sound of musical instrument is expressed
* Better if violin and cello sound are accurately distinguished. Good timbre means high quality.

2. Concept of Sound

By reproducing standard channels used during soundtrack recording of movie, it outputs 3 sounds of movie (words / music / sound effects) from 6 different speakers and provides surround dynamic sound effects so that you can even feel the direction of sound.

5.1 channel sound

5 channel

- Ⓐ Center Speaker : Voice (over 95%)
- Ⓑ Front Speaker (L/R) : Music Sound
- Ⓒ Rear Speaker (L/R) : Sound Effect

0.1 channel

- Ⓓ Subwoofer : Low Sound Effect

* Power amp is embedded in active sub woofer
* Require separate amp since there is no amp in passive sub woofer
  ❋ No difference in performance of active sub woofer and passive sub woofer

4. Home Theater Sound Format

Overview

* As home theater has recently penetrated deep into consumer's market in Korea, Dolby digital and DTS, the sound format for 5.1 channel home theater, are the mainstream in the market.
* Expanded type of 6.1 channel or 7.1 channel are recently released in the market, but there are not much DVD title that can support expanded type.

1958	**1Ch Mono/ 2Ch Stereo**
1982	**Matrix 3Ch Dolby Surround**
1987	**Matrix 4Ch Dolby Pro Logic**
1995	**5.1Ch Dolby Digital**
1997	**DTS (Digital Theater System)**
1999	**Matrix 6.1Ch Dolby Digital Sourround EX**

Home theater format...

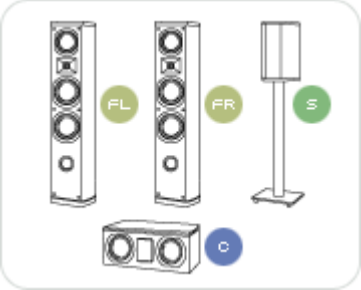
Stereo

Is used in general audio and analog TV and and consists of 2 channels, at front left/right

Dolby Surround

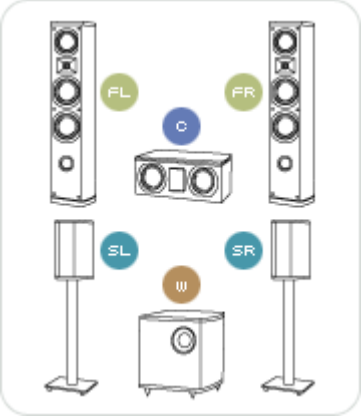
In this sound format, 4 audio channels (Front left / right / center / surround) are entered in 2 channel and reproduce in 4 channels through device with Dolby decoder.

Center channel is not completely separated so that it forms virtual center channel with help of front left / right channel.



Dolby Prologic

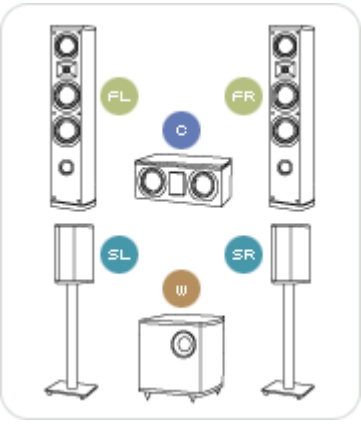
– Provide 4 channels (Front Left/Right/Center/Surround)
– Reinforced from Dolby Surround
① Center channel is completely separated
② Separation between channels gets higher



Dolby Digital

– Provide completely separate 5.1 channel
(Front Left/Right, Center, Rear Left/Right, Sub Woofer)
– Main sound format of home theater
– Reinforced from Dolby Prologic
– Rear surround left/right channels give different sound
– Support sub woofer reinforcing Bass

✻ Dolby Digital is also called AC-301
AC-3(Audo-Coding-3) : 3rd digital audio coding Dolby Research Center has developed.

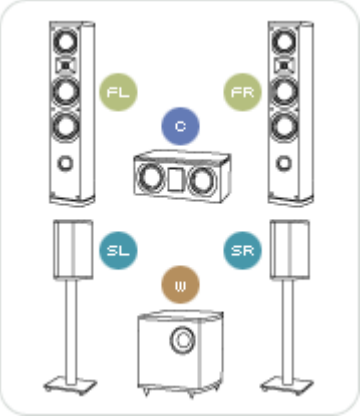


DTS(Digital Theater System)

– Technology of providing 5.1 channel sound, higher quality than Dolby Digital
– Home appliance produced to apply system installed at 1,800 theaters throughout the world.

✪ Comparison of DTS and Dolby Digital(DD)

SPEC	구분		설명
	DTS	DD	
S/N Ratio	High	Low	Signal to Noise ratio. The higher the S/N ratio, the clearer the sound gets
Compression	Low	High	Less compression of original sound results in less loss of reproduction and clearer sound.
Sound Separation	Big	Little	The bigger the sound separation, the clearer the sound from each speaker.
Transmission	Many	Few	The more information it transmits per second, the clearer the sound gets.



Dolby Prologic

– Latest technology reproducing music CD recorded in 2 channel, cassette tape and video tape made in Dolby Prologic into 5.1 channel.

– Surround speaker that makes you feel more natural, deeper and wider than existing Dolby Prologic.
(Ex-Profound sound adds more realistic presence from 5 speakers and sub woofer when you watch soccer match.)

DTS (Digital Theater System)

THX (Abbreviation of Tomlison Holman's Experiment)

– THX is not a sound format like a Dolby or DTS, but is a standard of sound. Like standard KS mark in Korea, THX means good certification in sound effects.

– THX issues certificate when a movie, theater or home theater system satisfy proper standards.

5. Home Theater Components

Display (Flat, Onjection, LCD, PDP TV, Projecter, etc.
DVD Receiver or DVD Player + AV Receiver
Speaker System (2EA)
Rear Speaker (2EA)
Center Speaker
Subwoofer

Amp / Receiver

Amp: Device of raising output after tuning signal of CD player or DVD into unique sound timbre

Various Types and Usages of Amplifier

- For Listening to Music ¡æ For Music+ Movie
- ① AV Receiver (Dedicated Lamp for Home Theater) : Preferred by Home Theater mania.
  ② DVD Receiver (DVD Player+ Amp+ Radio Tuner) : Suitable for beginner of Home Theater
- Many A/V companies adopt DVD receiver type for expansion of easy and economic Home Theater system.

Popular Korean Products

- Popular for those who pursue relatively good sound quality at low price
- Product priced between 400,000 won~600,000 won are popular.

Popular Foreign Products

– Popular for those who prefer profound sound volume/output(Hi-fi mania, Home Theater mania)
– Products in the range of middle and low price such as Denon, Yamaha, Onkyo (900,000~1.1 million won) are popular.
– There is very expensive product over 10 million won among foreign audio markers such as Merdian, Mcintosh, Krell.

Type of Amp/Receiver

* Pre Amp

A device that receives, adjusts and sends signal from source devices (tape deck, CD player, radio tuner, etc.) to power amplifier.

* Power Amp

A device that amplifies the signal from Pre Amp into big sound so that speaker can vibrate.

* Integrated Amp

A device that combines pre-amp and power amp into one.

* Receiver

A device that contains tuner for radio broadcasting and integrated amp.

A/V Receiver

General Amplifier
– Support 2 channels (Left, Right Speaker)
– Mainly reproduce music
– No decoder : cannot cope with various sound formats

A/V Receiver
– Support multi-channel (support 5.1 channel)
Launch products supporting 6.1 channel and 7.1 channel recently.
– Reproduce music and movie sound realistically
– Has decoder
Can cope with various sound formats such as Dolby Digital.

DTS
– Rich input/output
– Use digital signal type and has no sound

A/V Receiver

A device of implementing home theater more conveniently with radio and A/V receiver embeded in DVD player.

How to Select Amp/Receiver

- Select the products that can support both Dolby Digital and DTS since they require both for vivid sound

- Performance of amp gets better in output(W) but high output is a burden in narrow house.
- Important to match output(W) and capacity(§Ù) of amp and speaker.
- It is advantageous for beginners to purchase DVD receiver type that has amp and radio tuner in DVD player
- If the budget is tight, it is recommended to continue to upgrade after purchasing a low-priced system.

  * Computer will be of no use when it is outdated.
  * But, home theater system can be utilized in various ways due to feature of A/V device.

Speaker

Speaker system consists of speaker unit and enclosure.
The type and price range are diverse from expensive big speaker to miniature thin speaker.
Difference between famous speaker and big A/V speaker

- Speaker units are similar(there are a few several speaker unit makers in the world)
- Design, finishing, assembling and tuning process of enclosure are different.
  (Prestige speakers are made manually in whole processes of manufacturing)

Famous speaker brands: B&W, JBL, BOSE, Definitve, B&O, etc.

Tallboy Type

A speaker directly installed on the floor without separate speaker in the height of 90 ~ 120 cm.

Bookshelf Type

A small speaker that can be placed in bookshelf. Good for utilization of space since it can be mounted on the wall when installing home theater system in a narrow space.

Speaker Structure

Speaker Unit

- Divided into for high tone, middle tone and low tong
- Tweeter : for high pitch
  Smallest unit suitable for feature of high tone reproduction
- Mid-Range : for middle tone
  Mid sound reproduction ability is the most critical standard of speaker evaluation
- Woofer : for low tone
  Much bigger size than other speaker unit

Enclosure

- Case of speaker unit
- Enclosure sways sound quality of reproduction
- Low tone is almost acattered without enclosure, and only high sound tone is heard.

Type of Speaker System

Full Range Speaker

A speaker system producing sound with one speaker unit.

2 Way Type

A speaker system designed using units of 2 woofers for bass and tweeter for high tone.

3 Way Type

Difference between foreign prestige speaker and big A/V maker's speaker.

1. Precautions

Follow these safety, servicing and ESD precautions to prevent damage and protect against potential hazards such as electrical shock and X-rays.

1-1 Safety Precautions

1. Be sure that all of the built-in protective devices are replaced.

2. When reinstalling the chassis and its assemblies, be sure to restore all protective devices, including control knobs and compartment covers.

3. Make sure that there are no cabinet openings through which people--particularly children--might insert fingers and contact dangerous voltages. Such openings include the spacing between the picture tube and the cabinet mask, excessively wide cabinet ventilation slots, and improperly fitted back covers.

4. Design Alteration Warning:
   Never alter or add to the mechanical or electrical design of the unit. Example: Do not add auxiliary audio or video connectors. Such alterations might create a safety hazard. Also, any design changes or additions will void the manufacturer's warranty.

5. Leakage Current Hot Check (Figure 1-1):
   Warning: Do not use an isolation transformer during this test. Use a leakage-current tester or a metering system that complies with American National Standards Institute (ANSI C101.1, *Leakage Current for Appliances*), and Underwriters Laboratories (*UL Publication UL1410, 59.7*).

   With the unit completely reassembled, plug the AC line cord directly into a 120V AC outlet. With the unit's AC switch first in the ON position and then OFF, measure the current between a known earth ground (metal water pipe, etc.) and all exposed metal parts. Examples: Handle brackets, metal cabinets, screwheads and control shafts. The current measured should not exceed 0.5 milliamp. Reverse the power-plug prongs in the AC outlet and repeat.

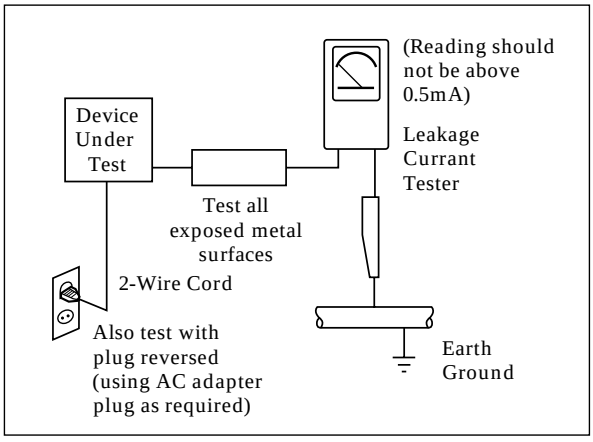

(Reading should not be above 0.5mA)
Device Under Test
Leakage Currant Tester
Test all exposed metal surfaces
2-Wire Cord
Also test with plug reversed (using AC adapter plug as required)
Earth Ground

Fig. 1-1 AC Leakage Test

6. Insulation Resistance Cold Check:
   (1) With the unit's AC plug disconnected from the AC source, connect an electrical jumper across the two AC prongs. (2) Set the power switch to ON. (3) Measure the resistance between the shorted AC plug and any exposed metallic parts. Example: Screwheads, antenna, control shafts or handle brackets.

   If any of the exposed metallic parts has a return path to the chassis, the measured resistance should be between 1 and 5.2 megohms. If there is no return path, the measured resistance should be "infinite." If the resistance is outside these limits, a shock hazard might exist. See Figure 1-2

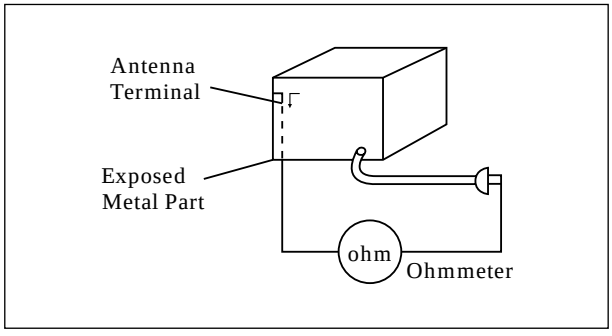


Fig. 1-2 Insulation Resistance Test

1-1 Safety Precautions (Continued)

7. Components, parts and wiring that appear to have overheated or that are otherwise damaged should be replaced with parts that meet the original specifications. Always determine the cause of damage or overheating, and correct any potential hazards

8. Observe the original lead dress, especially near the following areas: Antenna wiring, sharp edges, and especially the AC and high voltage power supplies. Always inspect for pinched, out-of-place, or frayed wiring. Do not change the spacing between components and the printed circuit board. Check the AC power cord for damage. Make sure that no wires or components touch thermally hot parts.

9. Product Safety Notice:
Some electrical and mechanical parts have special safety-related characteristics which might not be obvious from visual inspection. These safety features and the protection they give might be lost if the replacement component differs from the original--even if the replacement is rated for higher voltage, wattage, etc.

10 Components that are critical for safety are indicated in the circuit diagram by shading, ⚠ or ⚠ . Use replacement components that have the same ratings, especially for flame resistance and dielectric strength specifications. A replacement part that does not have the same safety characteristics as the original might create shock, fire or other hazards.

1-2 Servicing Precautions

Warning1: First read the "Safety Precautions" section of this manual. If some unforeseen circumstance creates a conflict between the servicing and safety precautions, always follow the safety precautions.

1. Servicing precautions are printed on the cabinet. Follow them.

2. Always unplug the unit's AC power cord from the AC power source before attempting to: (a) Remove or reinstall any component or assembly, (b) Disconnect an electrical plug or connector, (c) Connect a test component in parallel with an electrolytic capacitor.

3. Some components are raised above the printed circuit board for safety. An insulation tube or tape is sometimes used. The internal wiring may be clamped to prevent contact with thermally hot components. Reinstall all such elements to their original position.

4. After servicing, always check that the screws, components and wiring have been correctly reinstalled. Make sure that the portion around the serviced part has not been damaged.

5. Check the insulation between the blades of the AC plug and accessible conductive parts (examples: metal panels, input terminals and earphone jacks).

6. Insulation Checking Procedure: Disconnect the power cord from the AC source and turn the power switch ON. Connect an insulation resistance meter (500V) to the blades of the AC plug.

   The insulation resistance between each blade of the AC plug and accessible conductive parts (see above) should be greater than 1 megohm.

7. Never defeat any of the B+ voltage interlocks. Do not apply AC power to the unit (or any of its assemblies) unless all solid-state heat sinks are correctly installed.

8. Always connect a test instrument's ground lead to the instrument chassis ground *before* connecting the positive lead; always remove the instrument's ground lead last.

1-3 Precautions for Electrostatically Sensitive Devices (ESDs)

1. Some semiconductor ("solid state") devices are easily damaged by static electricity. Such components are called Electrostatically Sensitive Devices (ESDs). Examples include integrated circuits and some field-effect transistors. The following techniques will reduce the occurrence of component damage caused by static electricity.

2. Immediately before handling any semiconductor components or assemblies, drain the electrostatic charge from your body by touching a known earth ground. Alternatively, wear a discharging wrist-strap device. (Be sure to remove it prior to applying power--this is an electric shock precaution.)

3. After removing an ESD-equipped assembly, place it on a conductive surface such as aluminum foil to prevent accumulation of electrostatic charge.

4. Do not use freon-propelled chemicals. These can generate electrical charges that damage ESDs.

5. Use only a grounded-tip soldering iron when soldering or unsoldering ESDs.

6. Use only an anti-static solder removal device. Many solder removal devices are not rated as "anti-static" (these can accumulate sufficient electrical charge to damage ESDs).

7. Do not remove a replacement ESD from its protective package until you are ready to install it. Most replacement ESDs are packaged with leads that are electrically shorted together by conductive foam, aluminum foil or other conductive materials.

8. Immediately before removing the protective material from the leads of a replacement ESD, touch the protective material to the chassis or circuit assembly into which the device will be installed.

9. Minimize body motions when handing unpackaged replacement ESDs. Motions such as brushing clothes together, or lifting a foot from a carpeted floor can generate enough static electricity to damage an ESD.

1-4 Special Precautions and Warning Labels for Laser Products

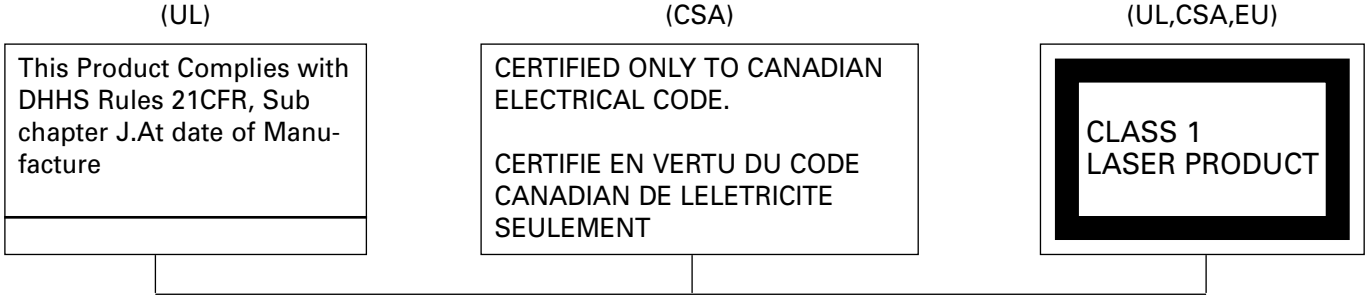

(UL)
This Product Complies with DHHS Rules 21CFR, Sub chapter J.At date of Manu-facture
(CSA)
CERTIFIED ONLY TO CANADIAN ELECTRICAL CODE.
CERTIFIE EN VERTU DU CODE CANADIAN DE LELETRICITE SEULEMENT
(UL,CSA,EU)
CLASS 1
LASER PRODUCT

Fig. 1-3 Warning Labels (Location: Enclosure Block)

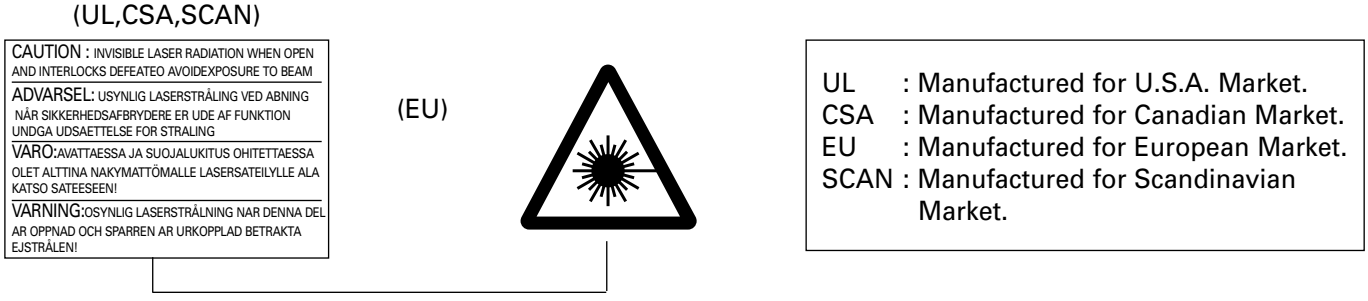

(UL,CSA,SCAN)
CAUTION : INVISIBLE LASER RADIATION WHEN OPEN AND INTERLOCKS DEFEATEO AVOIDEXPOSURE TO BEAM
ADVARSEL: USYNLIG LASERSTRÅLING VED ABNING NÅR SIKKERHEDSAFBRYDERE ER UDE AF FUNKTION UNDGA UDSAETTELSE FOR STRALING
VARO:AVATTAESSA JA SUOJALUKITUS OHITETTAESSA OLET ALTTINA NAKYMATTÖMALLE LASERSATEILYLLE ALA KATSO SATEESEEN!
VARNING:OSYNLIG LASERSTRÅLNING NAR DENNA DEL AR OPPNAD OCH SPARREN AR URKOPPLAD BETRAKTA EJSTRÅLEN!
(EU)
UL : Manufactured for U.S.A. Market.
CSA : Manufactured for Canadian Market.
EU : Manufactured for European Market.
SCAN : Manufactured for Scandinavian Market.

Fig. 1-4 Warning Labels (Location: Disc Clamper, Inner Side of Unit Door or Nearby Unit Chassis)

1-4 Special Precautions and Warning Labels for Laser Products (Continued)

1-4-1 Warnings

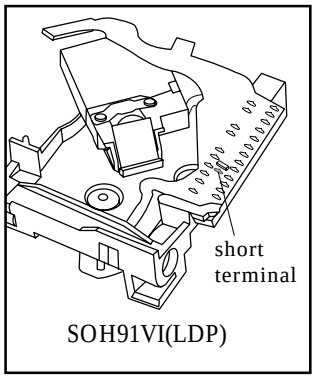
1. When servicing, do not approach the LASER exit with the eye too closely. In case it is necessary to confirm LASER beam emission, be sure to observe from a distance of more than 30 cm from the surface of the objective lens on the optical pick-up block.

2. Do not attempt to handle the objective lens when the DISC is not on the tray.

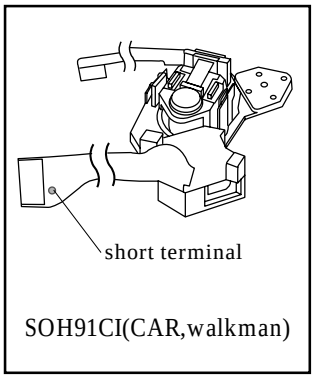
1-4-2 Laser Diode Specifications

Material: GaAs+ GaAlAs
Wavelength: 760-800 nm
Emission Duration: Continuous

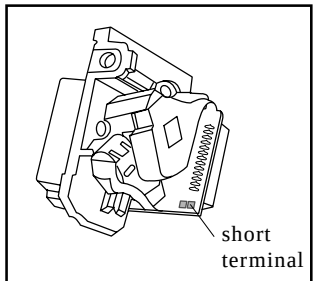
Laser Output: 0.2 mw (measured at a 1.6 mm distance from the objective lens surface on the optical pick-up block.)



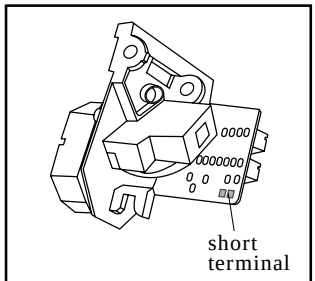
SOH91VI(LDP)



SOH91CI(CAR,walkman)



SOH-A1
(CMS-V10,CMS-V30)



SOH94T4N
(CMS-V10,CMS-V30)

1-4-3 Handling the Optical Pick-up

1. Static electricity from clothing or the body may cause electrostatic breakdown of the laser diode in the Optical Pickup. Follow this procedure:

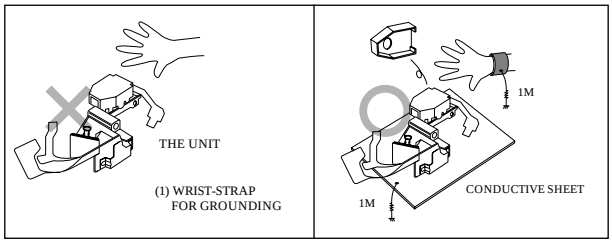
2. Place a conductive sheet on the work bench (i.e., the black sheet used for wrapping repair parts.) Note: The surface of the work bench should be covered by a copper ground plane, which is grounded.

3. The repair technician must wear a wrist strap which is grounded to the copper sheet.

4. To remove the Optical Pickup block: Place the set on the conductive sheet, and momentarily touch the conductive sheet with both hands. (While working, do not allow any electrostatic sources--such as clothes--to touch the unit.)

5. Ground the "Short Terminal" (located on the PCB, inside the Pickup Assembly) before replacing the Pickup. This terminal should be shorted whenever the Pickup Assembly is lifted or moved.

6. After replacing the Pickup, reopen the Short Terminal. See diagrams below:

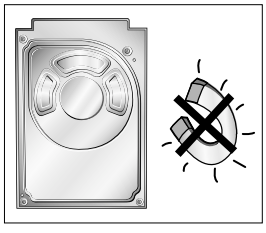


1-5 Special Precautions for HDD

* HDD Data Maintenance Step

1. Since the data on the HDD is weak to mechanical shock, place the HDD in a safe location that is free from mechanical shock once it is removed from the main unit.

2. In order to safe keep the data on the HDD, back up the data before the repair or make sure not to place the HDD near any electrical appliance that generates a strong magnetic field.



2. Product Description

1. Specifications

GENERAL	Power Consumption	70W		
	Weight	3.2Kg		
	Dimensions (W x H x D)	430 x 60 x 340 mm		
	Operating Temperature Range	+5°C~+35°C		
	Operating Humidity Range	10%~75%		
FM TUNER	Usable Sensitivity	10dB		
	S/N Ratio	60dB		
	Distortion	0.5%		
VIDEO OUTPUT	Composite Video	1.0Vp-p(75Ω load)		
	Scart Jack	Compositive Video : 1.0Vp-p(75Ω load)		
		RGB Signal : 0.714Vp-p(75Ω load)		
AMPLIFIER	Front speaker output	32W(4Ω)/CH		
	Center speaker output	63W(4Ω)		
	Rear speaker output	32W(4Ω)/CH		
	Subwoofer speaker output	64W(8Ω)		
	Frequency range	20Hz~20kHz		
	S/N Ratio	75dB		
	Channel separation	50dB		
	Input sensitivity	(AUX)500mV		
SPEAKER	Speaker system	**5.1ch speaker system**		
		Front/Rear speaker	**Center speaker**	**Subwoofer speaker**
	Impedance	4Ω x 4	4Ω	8Ω
	Frequency range	150Hz~20kHz	150Hz~20kHz	30Hz~150Hz
	Output sound pressure level	85dB/W/M	85dB/W/M	86dB/W/M
	Rated input	32W	63W	64W
	Maximum input	64W	126W	128W
	Dimensions (W x H x D)	90 x 107 x 95 mm	160 x 90 x 95 mm	145 x 320 x 340 mm
	Weights	0.36 Kg / 0.3 Kg	0.45 Kg	3.6 Kg

DVD (Digital Versatile Disc) offers fantastic audio and video, thanks to Dolby Digital surround sound and MPEG-2 video compression technology. Now you can enjoy these realistic effects in the home, as if you were in a movie theater or concert hall.

DVD players and the discs are coded by region. These regional codes must match in order for the disc to play. If the codes do not match, the disc will not play.
The Region Number for this player is given on the rear panel of the player.
(Your DVD player will only play DVDs that are labeled with identical region codes.)

Playable Discs

Disc Type	Mark (Logo)	Recorded Signals	Disc Size	Max. Playing Time
DVD		Audio + Video	12cm	Approx. 240 min. (single-sided)
				Approx. 480 min. (double-sided)
			8cm	Approx. 80 min. (single-sided)
				Approx. 160 min. (double-sided)
VIDEO-CD		Audio + Video	12cm	74 min.
			8cm	20 min.
AUDIO-CD		Audio	12cm	74 min.
			8cm	20 min.

Do not use the following types of disc!

- LD, CD-G, CD-I, CD-ROM and DVD-ROM cannot be played on this player.
  If such discs are played, a "**WRONG DISC FORMAT**" message appears on the TV screen.
- DVD discs purchased abroad may not play on this player.
  If such discs are played, a "**WRONG REGION CODE**" message appears on the TV screen.

Copy Protection

- **Many DVD discs are encoded with copy protection. Because of this, you should only connect your DVD player directly to your TV, not to a VCR. Connecting to a VCR results in a distorted picture from copy-protected DVD discs.**
- This product incorporates copyright protection technology that is protected by methods claims of certain U.S. patents and other intellectual property rights owned by Macrovision Corporation and other rights owners. Use of this copyright protection technology must be authorized by Macrovision Corporation, and is intended for home and other limited viewing uses only unless otherwise authorized by Macrovision Corporation. Reverse engineering or disassembly is prohibited.

Disc Recording Format

CD-R Discs

- Some CD-R discs may not be playable depending on the disc recording device (CD-Recorder or PC) and the condition of the disc.
- Use a 650MB/74 minute CD-R disc.
  Do not use CD-R disk over 700MB/80 minute as much as possible since it may not be played back.
- Some CD-RW (Rewritable) media, may not be playable.
- Only CD-Rs that are properly "closed" can be fully played. If the session is closed but the disc is left open, you may not be able to fully play the disc.

CD-R MP3 Discs

- Only CD-R discs with MP3 files in ISO 9660 or Joliet format can be played.
- MP3 file names should be 8 characters or less in length and contain no blank spaces or special characters (. / = +).
- Use discs recorded with a compression/decompression data rate greater than 128Kbps.
- Only files with the ".mp3" and ".MP3" extensions can be played.
- Only a consecutively written Multisession disc can be played. If there is a blank segment in the Multisession disc, the disc can be played only up to the blank segment.
- If the disc is not closed, it will take longer to begin playback and not all of the recorded files may be played.
- For files encoded in Variable Bit Rate (VBR) format, i.e. files encoded in both low bit rate and high bit rate (e.g., 32Kbps ~ 320Kbps), the sound may skip during playback.
- A maximum of 500 tracks can be played per CD.
- A maximum of 300 folders can be played per CD.

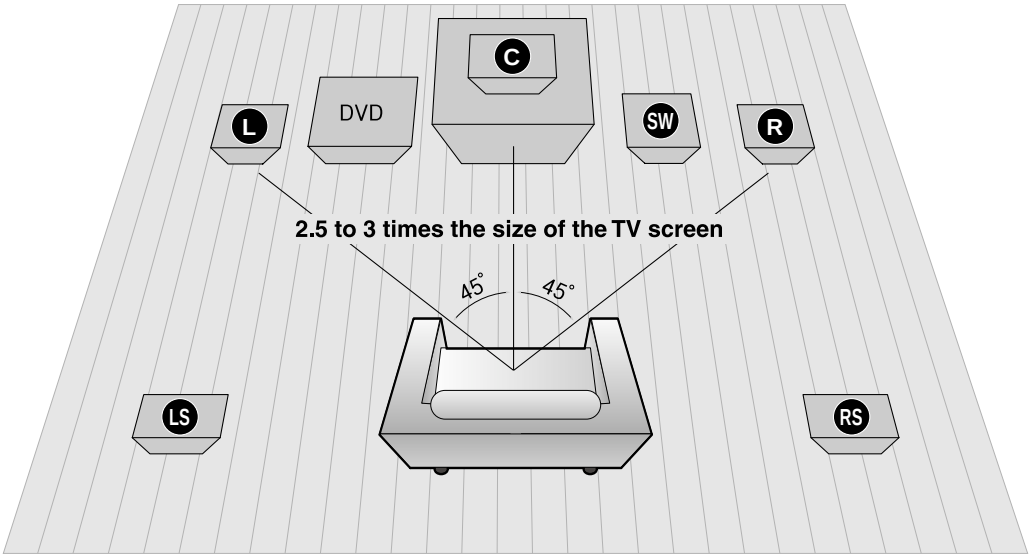
CD-R JPEG Discs

- Only files with the ".jpeg" and ".JPEG" extensions can be played.
- If the disc is not closed, it will take longer to start playing and not all of the recorded files may be played.
- Only CD-R discs with JPEG files in ISO 9660 or Joliet format can be played.
- JPEG file names should be 8 characters or less in length and contain no blank spaces or special characters (. / = +).
- Only a consecutively written multisession disc can be played. If there is a blank segment in the multisession disc, the disc can be played only up to the blank segment.
- A maximum of 9,999 images can be stored on a single CD.
- When playing a Kodak/Fuji Picture CD, only the JPEG files in the picture folder can be played.
- Picture discs other than Kodak/Fuji Picture CDs may take longer to start playing or may not play at all.

Code no.	Description & Specification	Remarks
AH42-00017A	ANTENNA-FM;T150S1N-1,1500##50m	
AH42-00019A	ANT LOOP;S0160BL-16,HT-DS665T,9uH	
AH59-01511A	REMOCON-ASSY;SAMSUNG	HT-P10, TP12 (EUR)
AH59-01511F	REMOCON-ASSY;SAMSUNG	HT-RP16 (XEU)

3. Product Functions

1. SPK connection



Position of the DVD Player

- Place it on a stand or cabinet shelf, or under the TV stand.

Front Speakers L R

- Place these speakers in front of your listening position, facing inwards (about 45°) toward you.
- Place the speakers so that their tweeters will be at the same height as your ear.
- Align the front face of the front speakers with the front face of the center speaker or place them slightly in front of the center speakers.

Center Speaker C

- It is best to install it at the same height as the front speakers.
- You can also install it directly over or under the TV.

Selecting the Listening Position

The listening position should be located about 2.5 to 3 times the distance of the TV's screen size away from the TV. Example: For 32" TVs 2~2.4m (6~8feet)
For 55" TVs 3.5~4m (11~13feet)

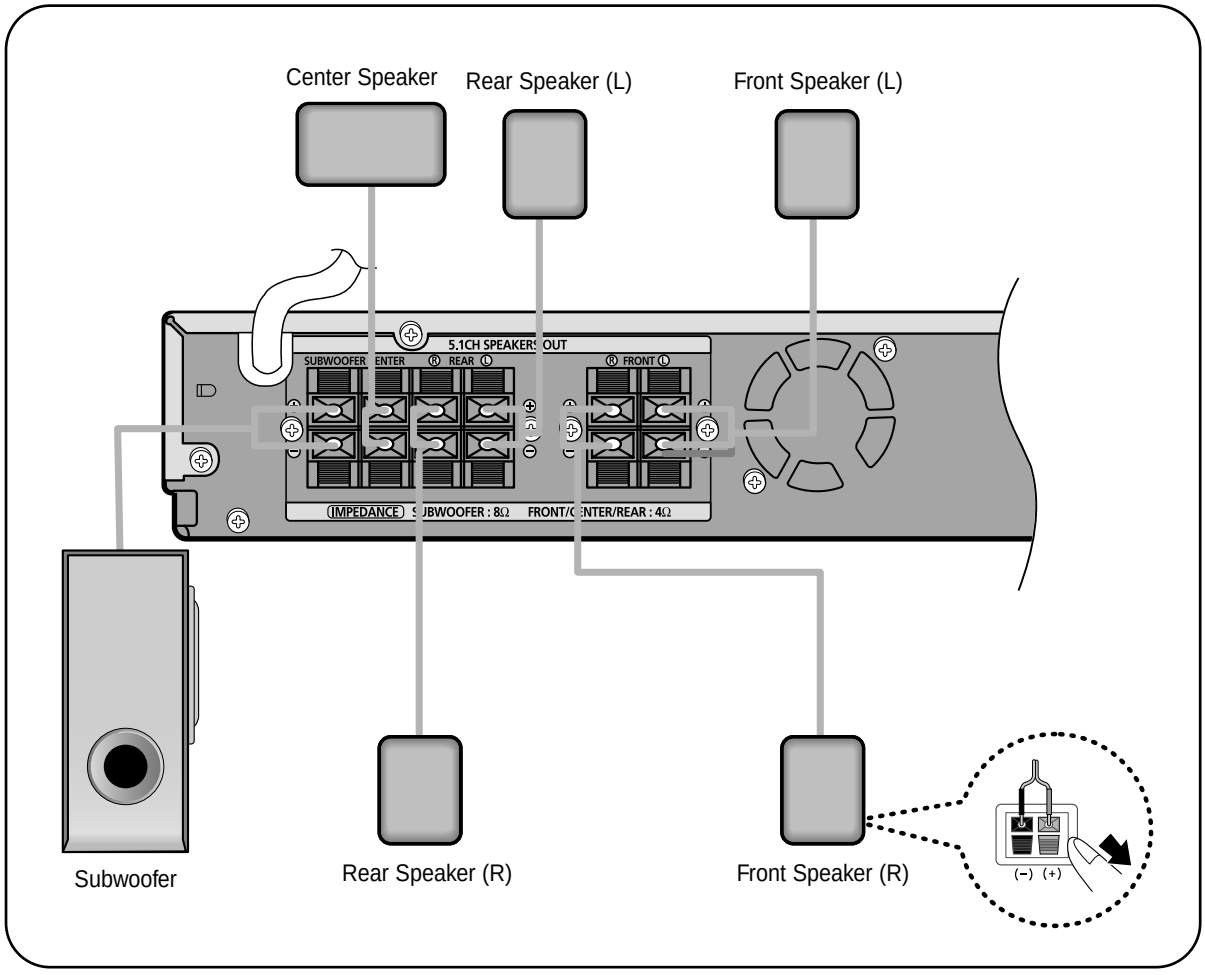
Rear Speakers LS RS

- Place these speakers behind your listening position.
- If there isn't enough room, place these speakers to face each other.
- Place them about 60 to 90cm (2 to 3feet) above your ear, facing slightly downward.

* Unlike the front and center speakers, the rear speakers are used to handle mainly sound effects and sound will not come from them all the time.

Subwoofer SW

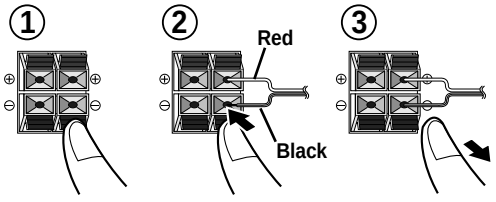
- The position of the subwoofer is not so critical. Place it anywhere you like.
- Usually, it is placed by a corner near the front speakers.



1 **Press and hold the terminal tab.**

2 **Insert the speaker cord.**

3 **Release the finger.**



Note • Connect the red cord to the red (+) terminal and the black cord to the black (-) terminal.

Disc Playback

1 Press **OPEN/ CLOSE** button to open the disc tray.

2 Load a disc.

- Place a disc gently into the tray with the disc's label facing up.

3 Press **OPEN/ CLOSE** button to close the disc tray.

DVD VCD CD

- Playback starts automatically.

Note

- Depending on the content of the disc, the initial screen may appear different.

To stop playback, press **STOP** during playback.

- If pressed once, "**PRESS PLAY**" is displayed and the stop position will be stored in memory.
  If **PLAY/PAUSE** (▶/II) button or **ENTER** button is pressed, playback resumes from the stop position.
  (This function works only with DVDs.)
- If pressed twice, "**STOP**" is displayed, and if **PLAY/PAUSE** (▶/II) button is pressed, playback starts from the beginning.

To temporarily pause playback, press **PLAY/PAUSE** during playback.

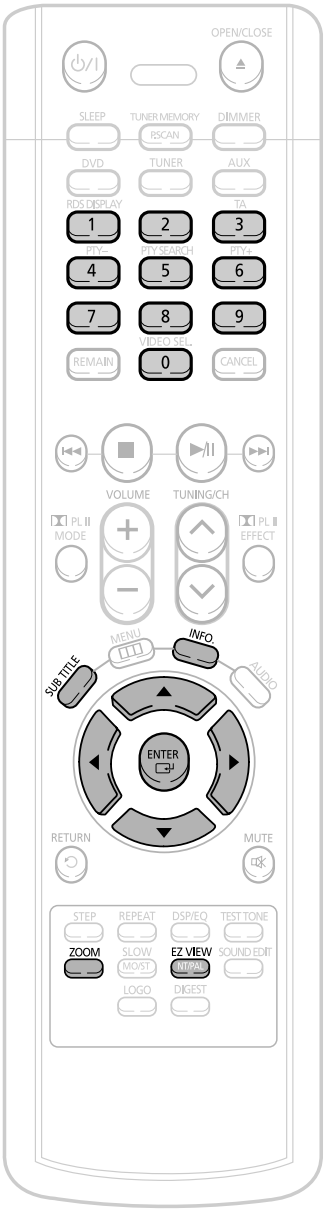
- To resume playback, press **PLAY/PAUSE** (▶/II) button again.

Selecting the Video Format

Press and hold **NT/PAL** button on the remote controller for over 5 seconds while the power is turned off.

- By default, the video format is set to "PAL".
- "**NTSC**" or "**PAL**" will appear in the display.
  At this time, press the **NT/PAL** button shortly to select between "**NTSC**" and "**PAL**".
- Each country has a different video format standard.
- For normal playback, the video format of the disc must be the same as the video format of your TV.

Selecting Audio/Subtitle Language



Audio Language Selection Function DVD

1 Press **INFO** button twice.

DVD EN 1/3 OFF/ 02 OFF

2 Press Cursor ▲ ,▼ buttons or numeric buttons to select the desired audio language.

- Depending on the number of languages on a DVD disc, a different audio language (ENGLISH, SPANISH, FRENCH, etc.) is selected each time the button is pressed.

DVD EN 1/3 OFF/ 02 OFF

◆ SP 2/3

◆ FR 3/3

Note

- You can use the AUDIO button on the remote control to select a audio language.

Subtitle Language Selection Function DVD

1 Press **INFO** button twice.

DVD EN 1/3 OFF/ 02 OFF

2 Press Cursor ▶ button to move to SUBTITLE ( ) display.

DVD EN 1/3 OFF/ 02 OFF

3 Press Cursor ▼ button or numeric buttons to select the desired subtitle.

DVD EN 1/3 EN 01/ 03 OFF

◆ SP 02/ 03

◆ FR 03/ 03

◆ OFF / 03

Note

- You can use the SUBTITLE button on the remote control to select a subtitle language.
- Depending on the disc, the Subtitle and Audio Language functions may not work.

Using Disc Menu DVD

You can use the menus for the audio language, subtitle language, profile, etc.
DVD menu contents differ from disc to disc.

1 In Stop mode, press **MENU** button.

- When playing a VCD (version 2.), this toggles between PBC ON and OFF.

2 Press Cursor ▲,▼ buttons to move to 'DISC MENU' and then press **ENTER** button.

- When you select the disc menu that is not supp t-ed by the disc, the "**This menu is not supporte** message appears on the screen.

3 Press Cursor ▲,▼ ◄, ► buttons to select the desired item.

- Press ENTER button.

Note

PBC (Playback Control) Function
When playing a VCD (version 2.0), you can select and view various scenes according to the menu screen.

PBC ON: This VCD disc is version 2.0. The disc is played back according to the menu screen. Some functions may be disabled. When some functions are disabled, select "PBC OFF" to enable them.

PBC OFF: This VCD disc is version 1.1. The disc is played back in the same way as with a music CD.

Using the Title Menu DVD

For DVDs containing multiple titles, you can view the title of each movie.
Depending on the disc, the availability of this feature may vary.

1 In Stop mode, press **MENU** button.

2 Press Cursor ▲,▼ button to move to 'Title Menu'.

3 Press **ENTER** button.

- The title menu appears.

Press **MENU** button to exit the setup screen.

DivX Playback

Skip Forward/Back

During playback, press the ⏮ ⏭ button.

- Go to the next file whenever you press ⏭ button, if there are over 2 files in the disk.
- Go to the previous file whenever you press ⏮ button, if there are over 2 files in the disk.

Fast playback

To play back the disc at a faster speed, press and hold ⏮ or ⏭ during playback.

- Each time you press and hold either button, the playback speed will change as follows:
  2x → 4x → 8x → 32x → Normal.

5 Minute Skip function

During playback, press the ◀ ,▶ button.

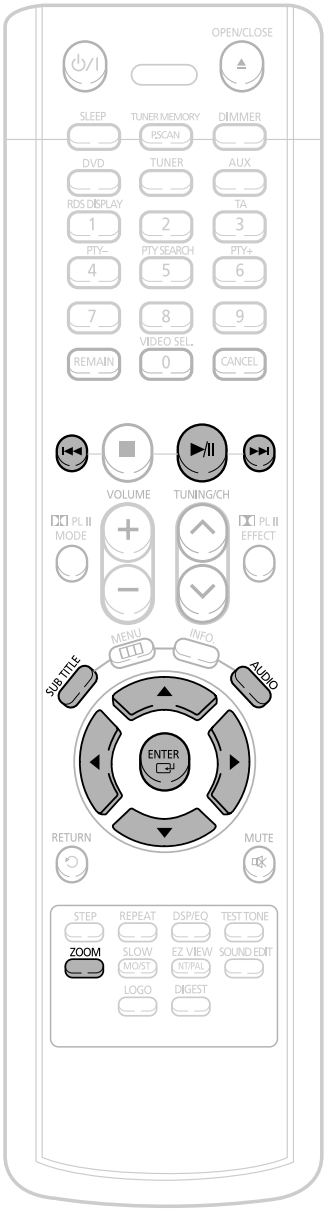
- Go to the screen about 5 minutes after whenever you press ▶ button.
- Go to the screen about 5 minutes earlier whenever you press ◀ button.

Zoom Function

1 Press **ZOOM** button.

- Each time you press the button, your selection will toggle between "**ZOOM X2**" and "**ZOOM OFF**".

2 Press Cursor ▲,▼ , ◀ ,▶ buttons to move to the area you want to enlarge.



Note • DIVX file can be zoomed only in ZOOM X2 mode.

Subtitle Display

Press the **SUBTITLE** button.

- Each time you press the button, your selection will toggle between "**SUBTITLE ON**" (1/1, 1/2 ...) and "**SUBTITLE OFF**".
- If the disc has only one subtitle file, it will be played automatically.

Audio Display

Press the **AUDIO** button.

- Each time you press the button, your selection will toggle between "**AUDIO ON**" (1/1, 1/2 ...) and " ".

Note • " " is displayed when there is one supported audio item in the disc.

DivX(Digital internet video eXpress)

DivX is a video file format developed by Microsoft based on the MPEG4 so as to provide audio, and video data over the Internet in real-time.
MPEG4 is used for video encoding and MP3 for audio encoding so that the users can watch a movie in DVD-quality video and audio.

1. Supported Formats

- This product only provides the following media formats. If both of the video and audio formats are not supported simultaneously, the user may experience problems such as broken image or no sound.

• Supported Video Formats

Format	AVI	WMA
Surpported Versions	DivX3.11 ~ 5.1	V1/V2/V3/V7

• Supported Audio Format

Format	MP3	WMA	AC3	DTS
Bit Rate	80~384kbps	56~128kbps	128~384kbps	N/A
Sampling Frequency	44.1khz		44.1/48khz	N/A

- Aspect Ratio: Although default DivX resolution is 640*480 pixels (4:3), this product supports up to 720*480 pixels (16:9). It will not be supported when the screen resolution is higher than 800.

2. Caption Related

- To use the caption function, save the caption file (*.smi) in the same file name as that of the DivX media file (*.avi) within the same folder.
  Example. Root Samsung_Bluetek_007CD1.avi
  Samsung_Bluetek_007CD1.smi
- Up to 60 alphanumeric characters or 30 East Asian characters (2 byte characters such as Korean and Chinese) for the file name.

4. Adjustments

* Protection Mode Explanation

▣ Finding PBA Causing Protection

1. Protection Conditions

1> If PVDD(CN7) voltage of SMPS is higher or lower than normal voltage
Normal : PVDD(CN7) : 28V ~ 31V

2> If POWER STAGE is OVER CURRENT (excessive output and SPK Short)

3> If POWER STAGE is over 150℃ (Thermal Protection)

4> If the secondary voltage is short and open

2. Finding Protection Point

1> You can check in advance whether AMP is defective before disassembling main unit.(Do not insert AC-CORD into outlet)

2> Finding After Disassemble

Main Unit Chassis

Check whether Connector-wire and Cable are properly inserted → Assemble again after disassembling Wire and Cable if they seem defective

Separate J3(6P wire) from PBA → Check if protection occurs during Power-on → Check voltage between both ends of PVDD and GND (29.5V ~ 31V) * Replace between NG->SMPS

☞ Measure resistance value with TESTER
◆ P10 Series
F/C/R-CH : about 5kΩ
S-WOOFER : about 10kΩ

※ There is a problem in AMP-PCB if measured resistance is substantially lower than above resistance

Separate PJ1(26P cable) from PBA → Check if protection occurs during Power-on → AMP-PCB Problem (Check cause) NG-> Amp PBA repair and replacement

Check each voltage of CN4,6 and other wire voltage → Check if protection occurs during Power-on → 1> Check whether there is a problem in SMPS power
2> Check MPEG if there is no problem in SMPS
3>Check MAIN(JACK)-PCB and power LINE (check cause)
※ Analyze the cause by checking voltage of MAIN-PCB rather than replacement

If voltage of CN4,6 is not normal, separate CON-Wire from CN4 and CN6 and recheck SMPS voltage -> Replace SMPS if defective

PCB Marking Standard

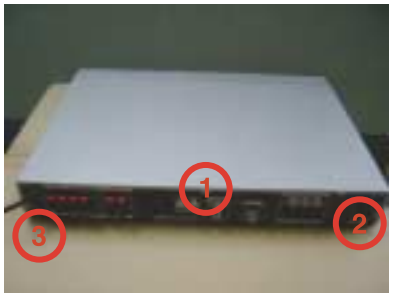
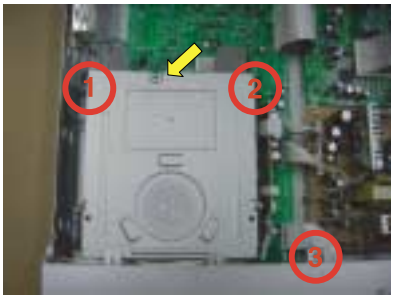
NO	SMPS↔MAIN
1	A_5V GND
2	A_5V
3	D_5V GND
4	D_5V GND
5	D_5V
6	D_5V
7	MTR_8V GND
8	MTR_8V

NO	SMPS↔MAIN
1	+12V
2	-12V
3	A_GND
4	+3.3V
5	+3.3V
6	+3.3V_GND
7	+5.6V
8	D_GND
9	VP -32V
10	VP_GND
11	-VFD
12	+VFD
13	P_SENS
14	P_ON

5. How to disassemble

* CAUTIONS

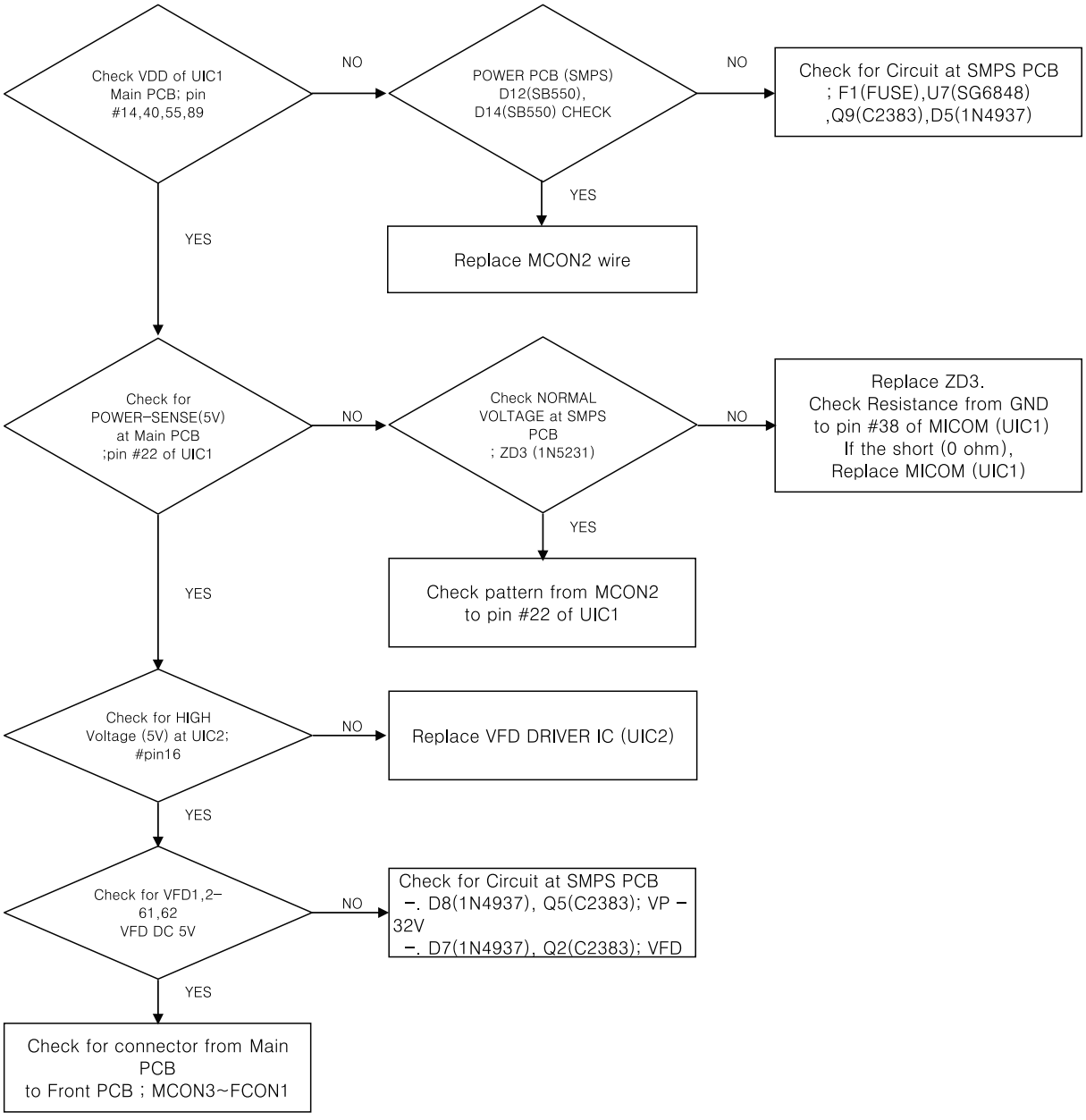
1. To avoid damage to the product, follow the disassembly method in the Service Manual.
2. As some Semiconductor devices are very sensitive to static,
   ensure that all procedures are adhered to when handling ESD's.

Order (Description)	Picture
1. Unfasten 4 screw on the side of CABINET TOP. *** Screw 1,2** SPEC : BWH 3*8 SILVER	
2. Unfasten 3 screw(1,2,3,4) on the side of CABINET REAR.	
3. Unfasten 4 screw(1,2,3) and lift the back of the MECHA. *** Screw 1,2,3,4** SPEC : BH 3*20 YELLOW	

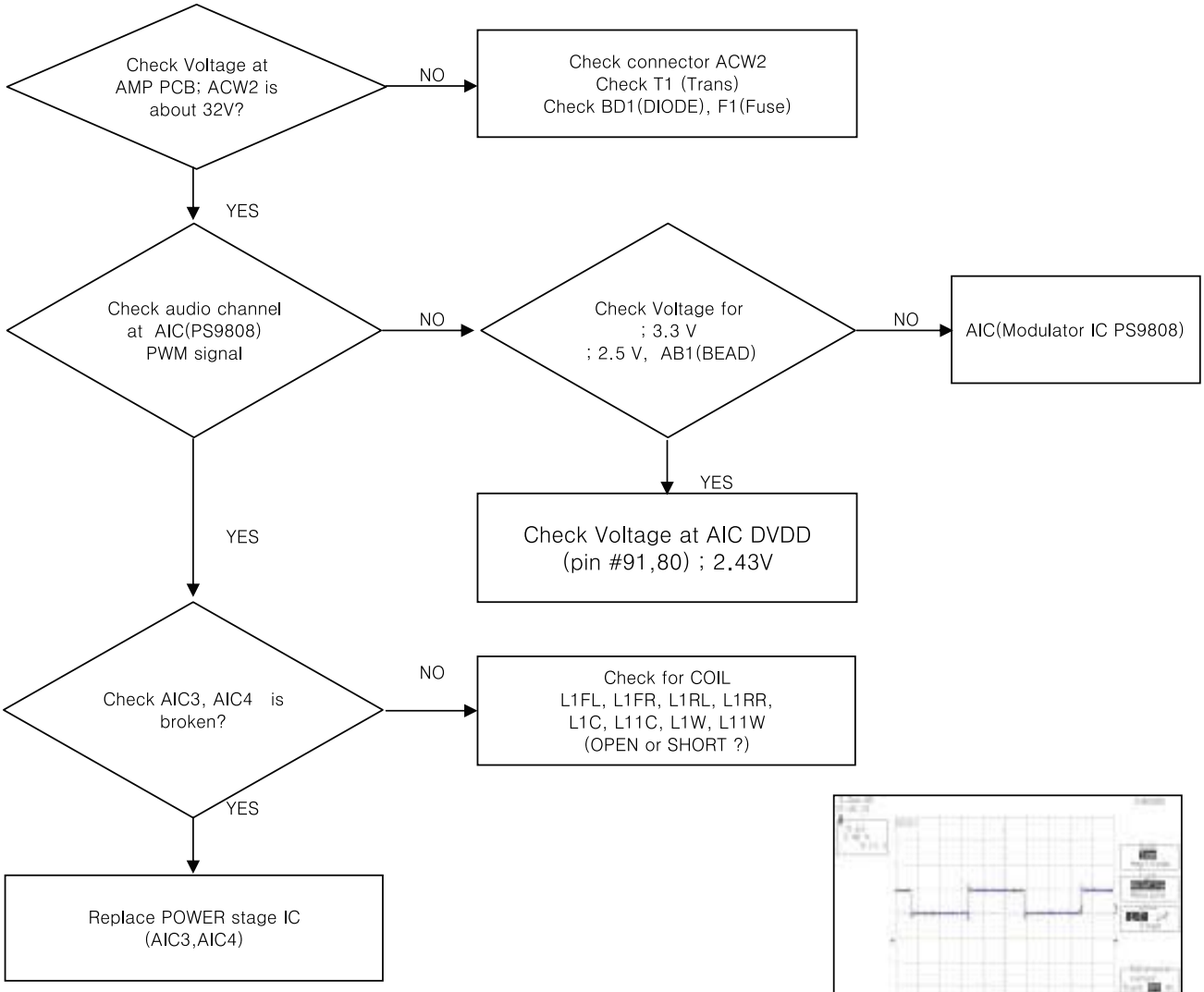
Order (Description)	Picture
4. Separate 1 cable in the circle.	
5. Unfasten 2 screw(1,2) on the Front. *** Screw 1,2** SPEC : FH 3*10 BLACK	
6. Unfasten 2 screw(1,2) on the CABINET-BOTTOM. *** Screw 1,2** SPEC : FH 3*10 YELLOW Turn over the hook at 2 places of the bottom and Separate ASSY-FRONT.	

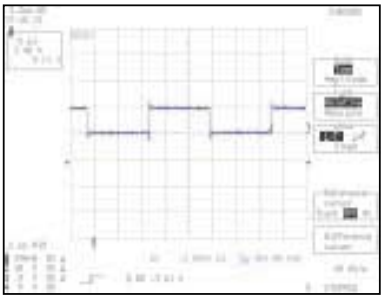
6. TroubleShooting

1. NO Power

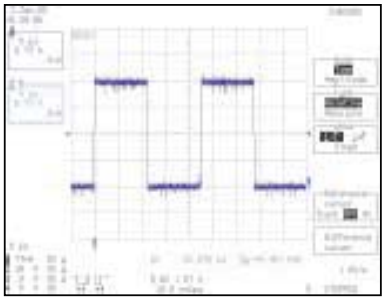


2. NO Output

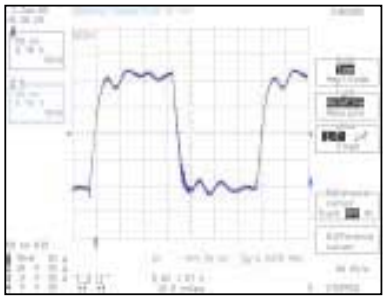

Check Voltage at AMP PCB; ACW2 is about 32V?
NO
Check connector ACW2
Check T1 (Trans)
Check BD1(DIODE), F1(Fuse)
YES
Check audio channel at AIC(PS9808) PWM signal
NO
Check Voltage for ; 3.3 V ; 2.5 V, AB1(BEAD)
NO
AIC(Modulator IC PS9808)
YES
Check Voltage at AIC DVDD (pin #91,80) ; 2.43V
YES
Check AIC3, AIC4 is broken?
NO
Check for COIL L1FL, L1FR, L1RL, L1RR, L1C, L11C, L1W, L11W (OPEN or SHORT ?)
YES
Replace POWER stage IC (AIC3,AIC4)



PWM : AMP PCB AIC1
Pin#48,49(SW),#51,52(C),
Pin#54,55(RL),#58,59(FL)
Pin#61,62(RR),#67,68(FR)

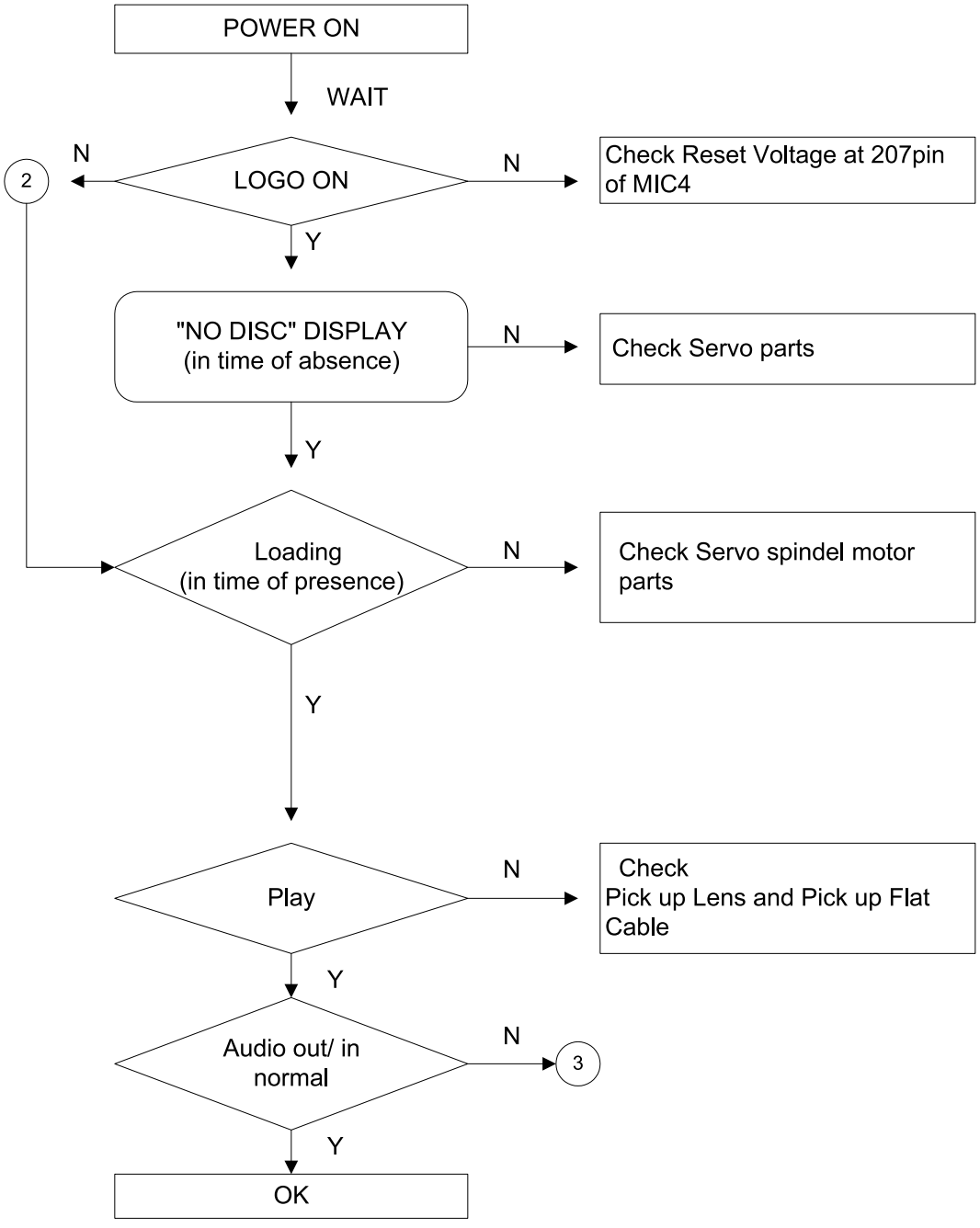


LRCLK : AMP PCB ACW7
Pin#11

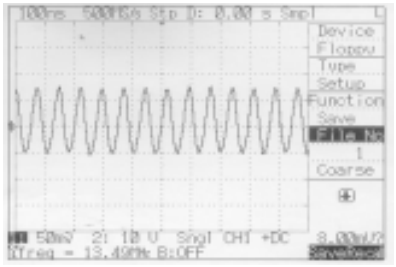


BCLK : AMP PCB ACW7
Pin#12

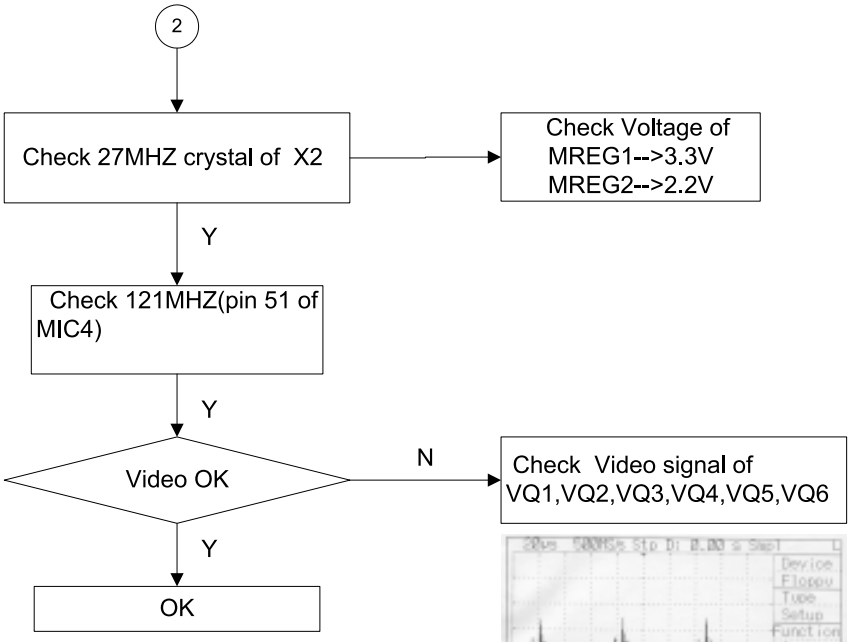
1. Initial operation after power on



2. Logo operation

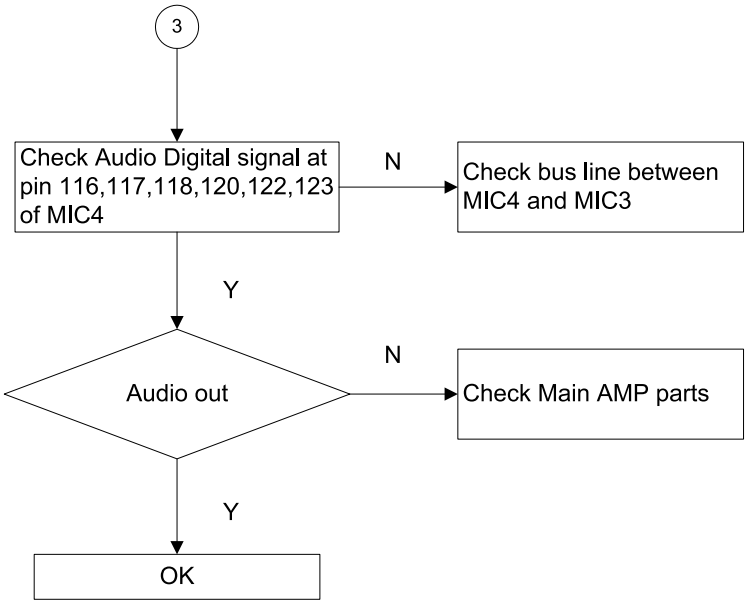


27MHZ

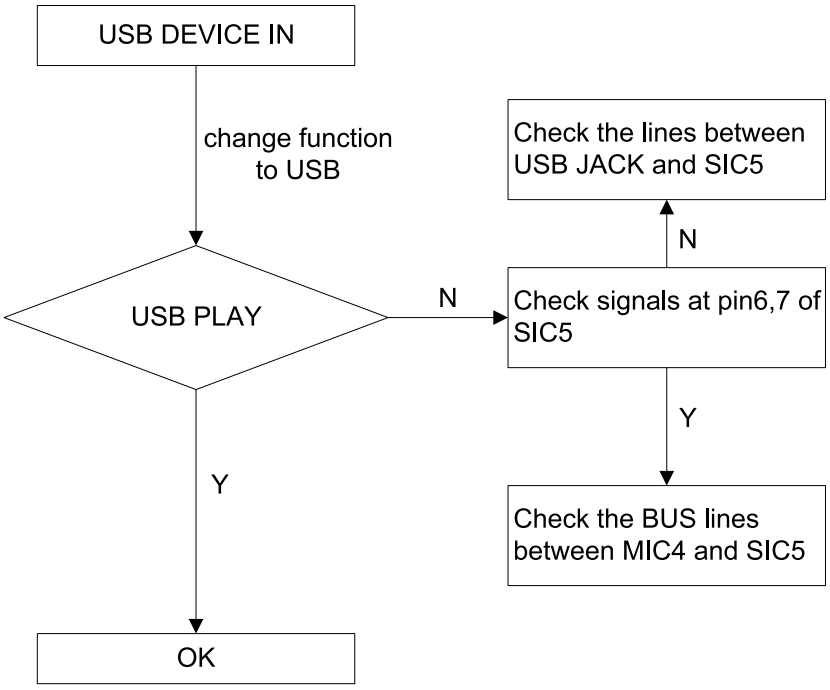


Composite
Video Signal

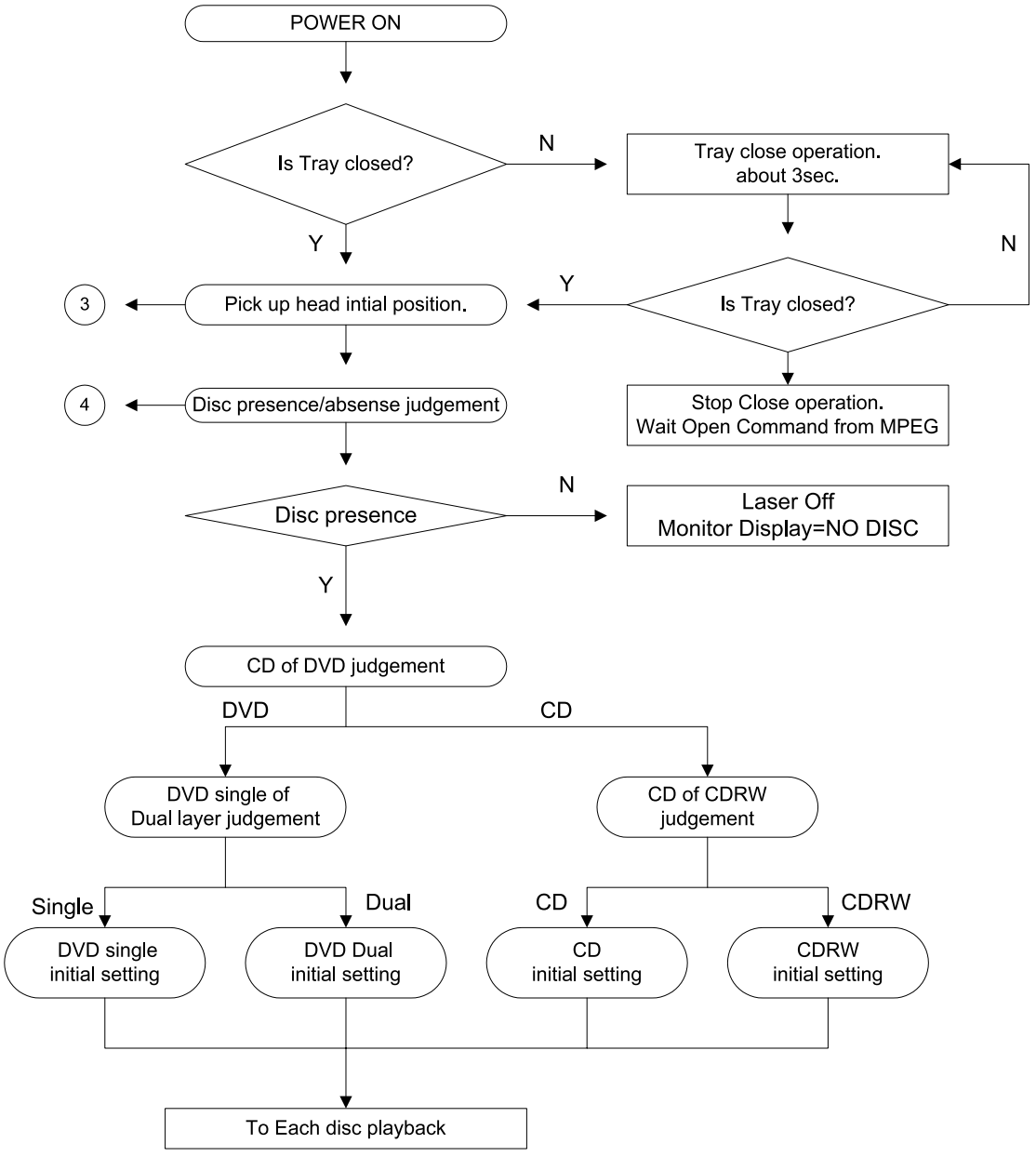
3.Audio operation

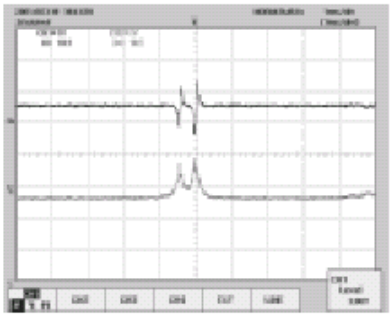


4. USB operation

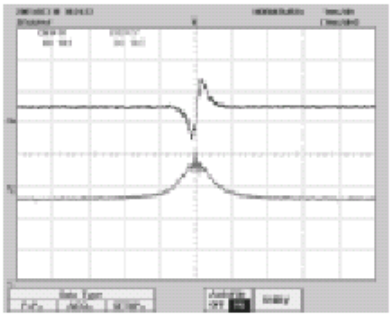


1. Initial operation after power ON



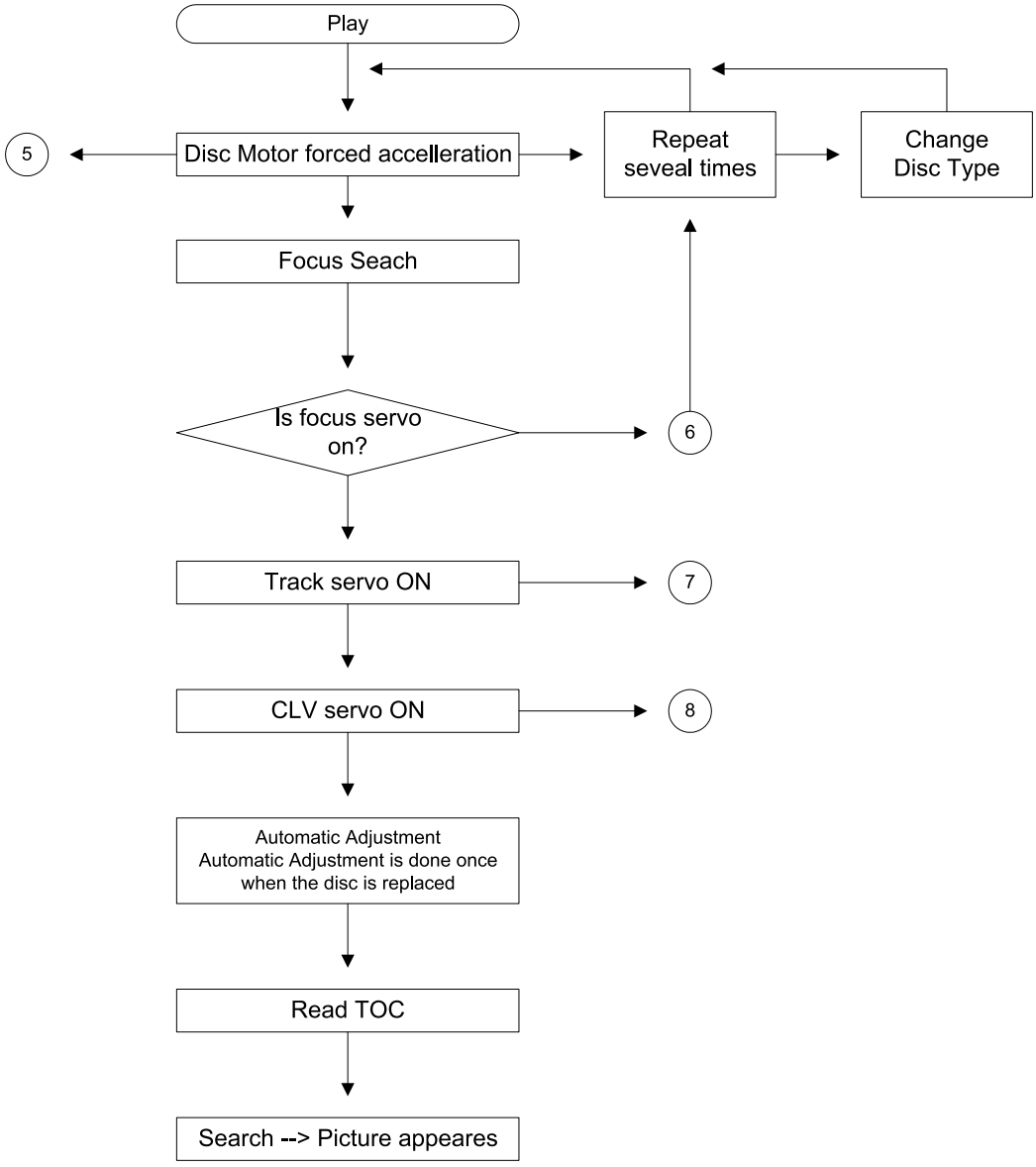


(DVD Dual)



(DVD Single)

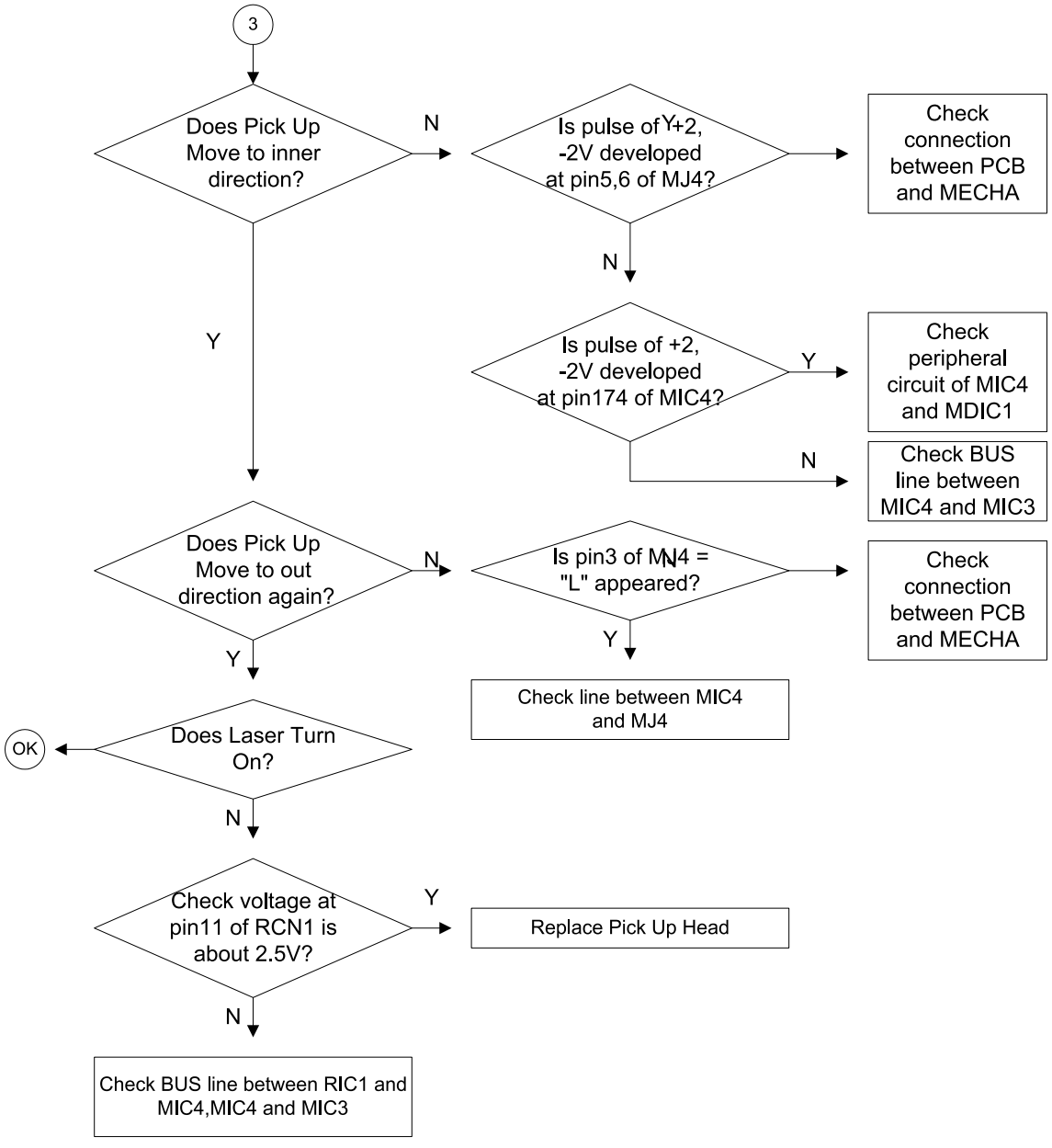
2. Play operation



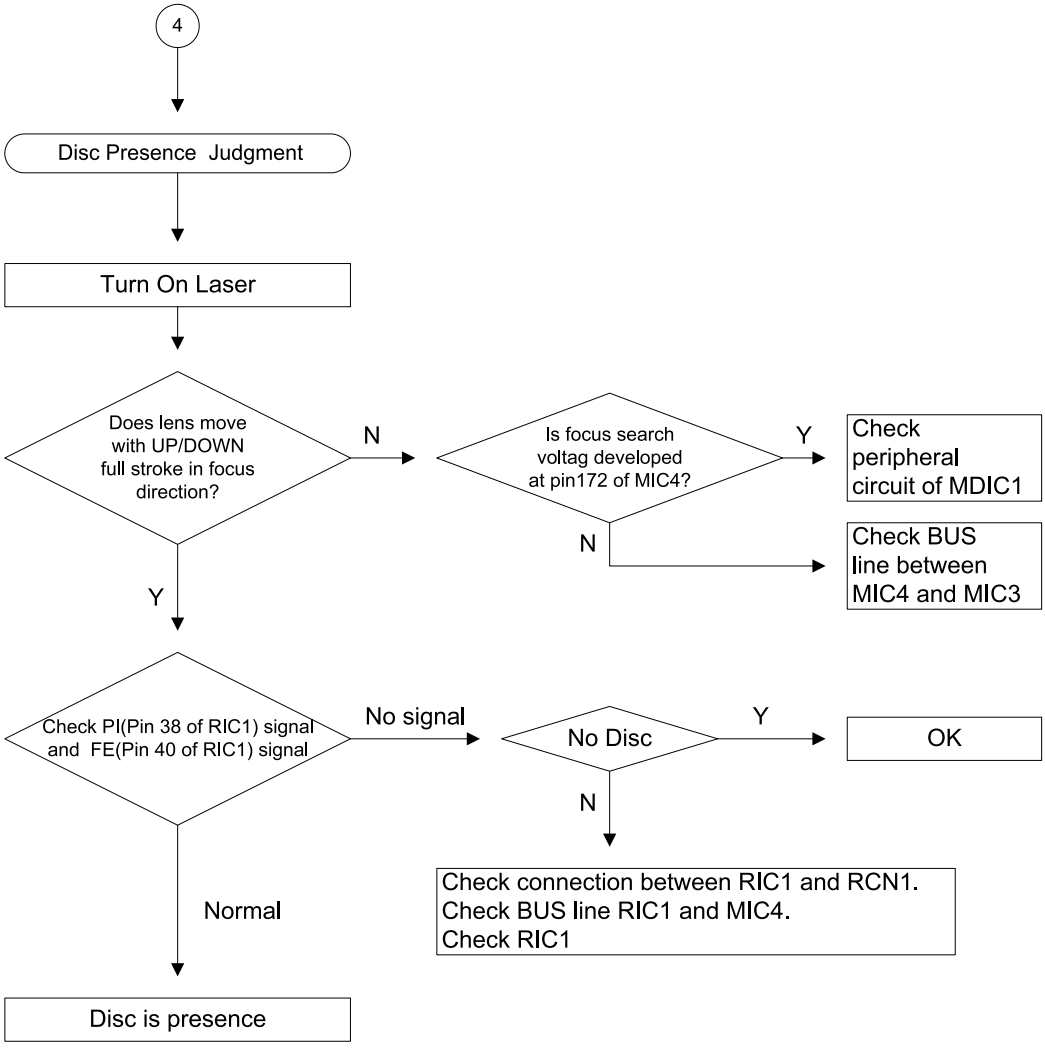
3. PickUp Head Initial Postion

PickUp Head Initial Postion

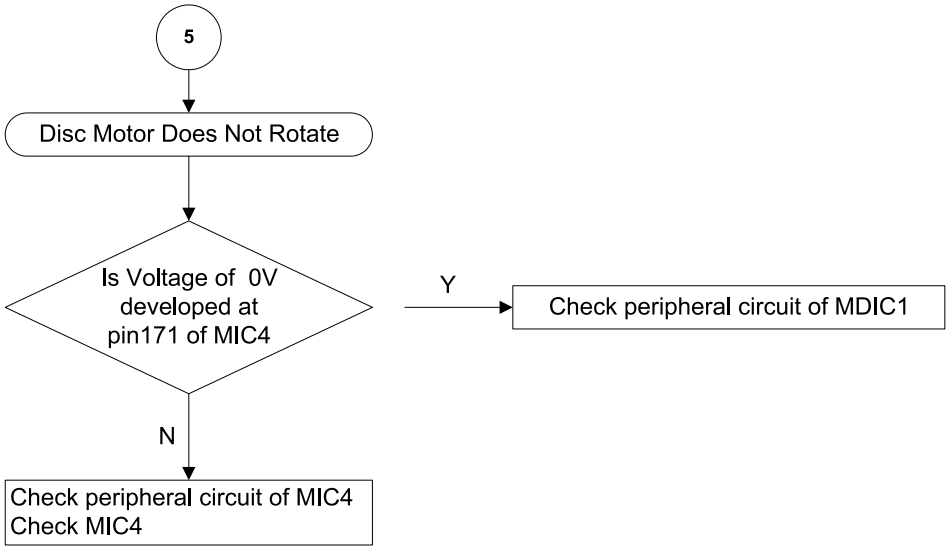
1. Move Pick Up Head to inner diretion until pin3 of MJ4="L"
2. If pin3 of MJ4="L", then move Pick Up Head to outer diretion for a short time.
3. Ture On the Laser of Pick Up Head to judge that disc is presence or not.


3
Does Pick Up Move to inner direction?
N
Is pulse of +2, -2V developed at pin5,6 of MJ4?
Y
Check connection between PCB and MECHA
N
Y
Is pulse of +2, -2V developed at pin174 of MIC4?
Y
Check peripheral circuit of MIC4 and MDIC1
N
Check BUS line between MIC4 and MIC3
Does Pick Up Move to out direction again?
N
Is pin3 of MJ4 = "L" appeared?
N
Check connection between PCB and MECHA
Y
Y
Check line between MIC4 and MJ4
OK
Does Laser Turn On?
N
Check voltage at pin11 of RCN1 is about 2.5V?
Y
Replace Pick Up Head
N
Check BUS line between RIC1 and MIC4,MIC4 and MIC3

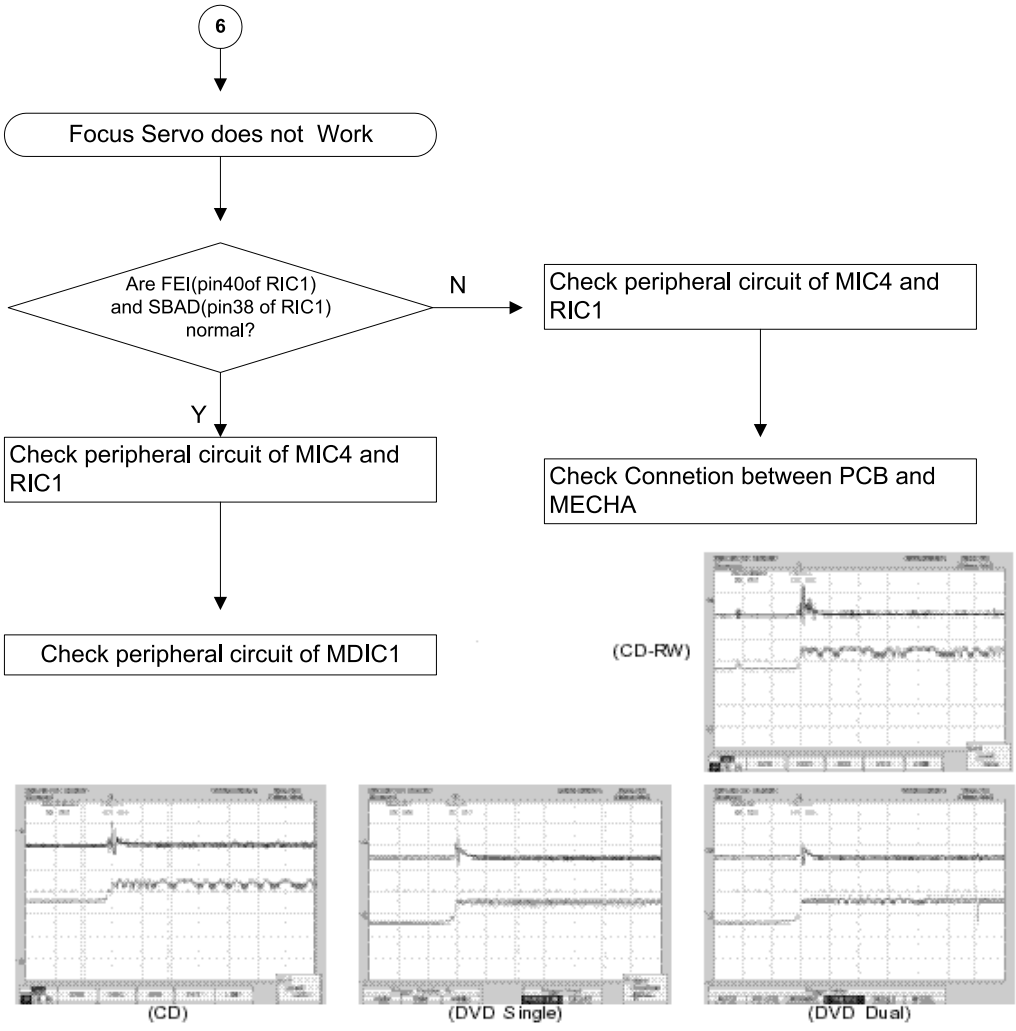
4. Disc Presence/Absense Judgment



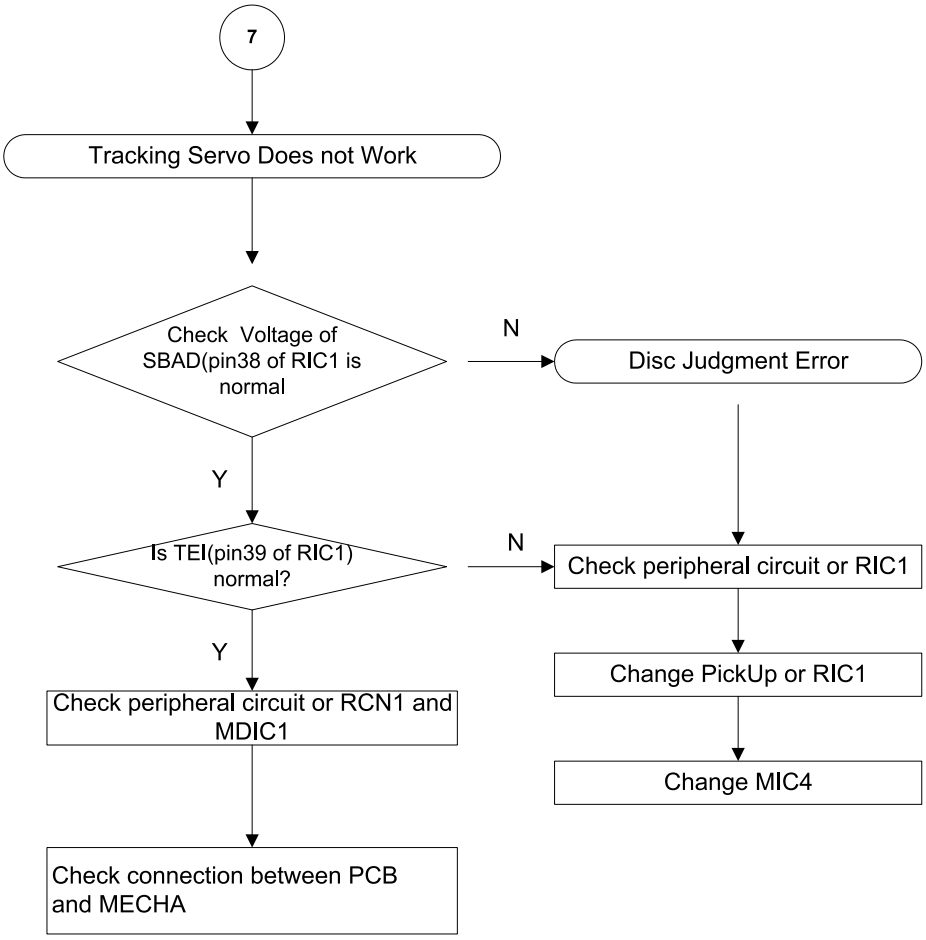
5. Disc Motor Does Not Rotate

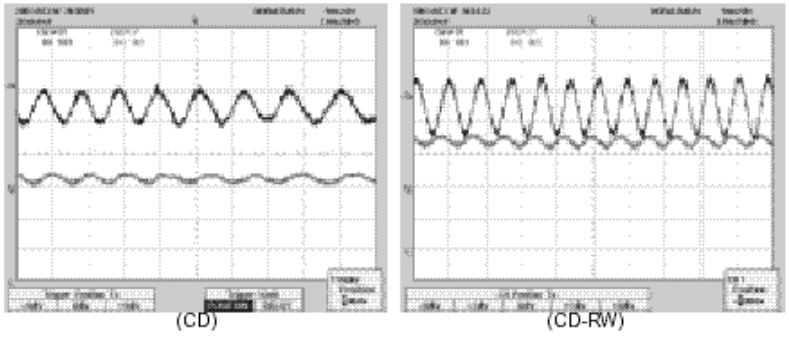


6. Focus Servo does not Work

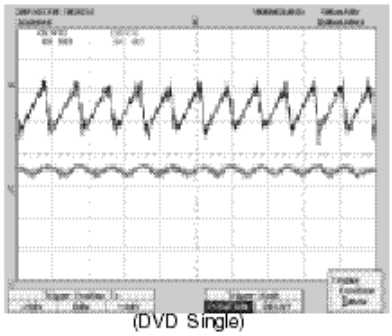


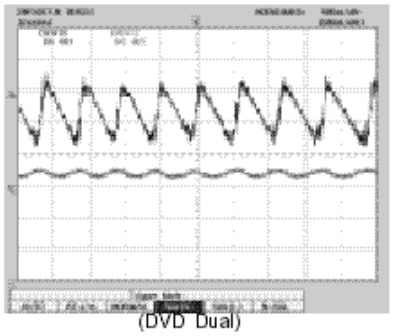
7. Tracking Servo Does Not Work




(CD)

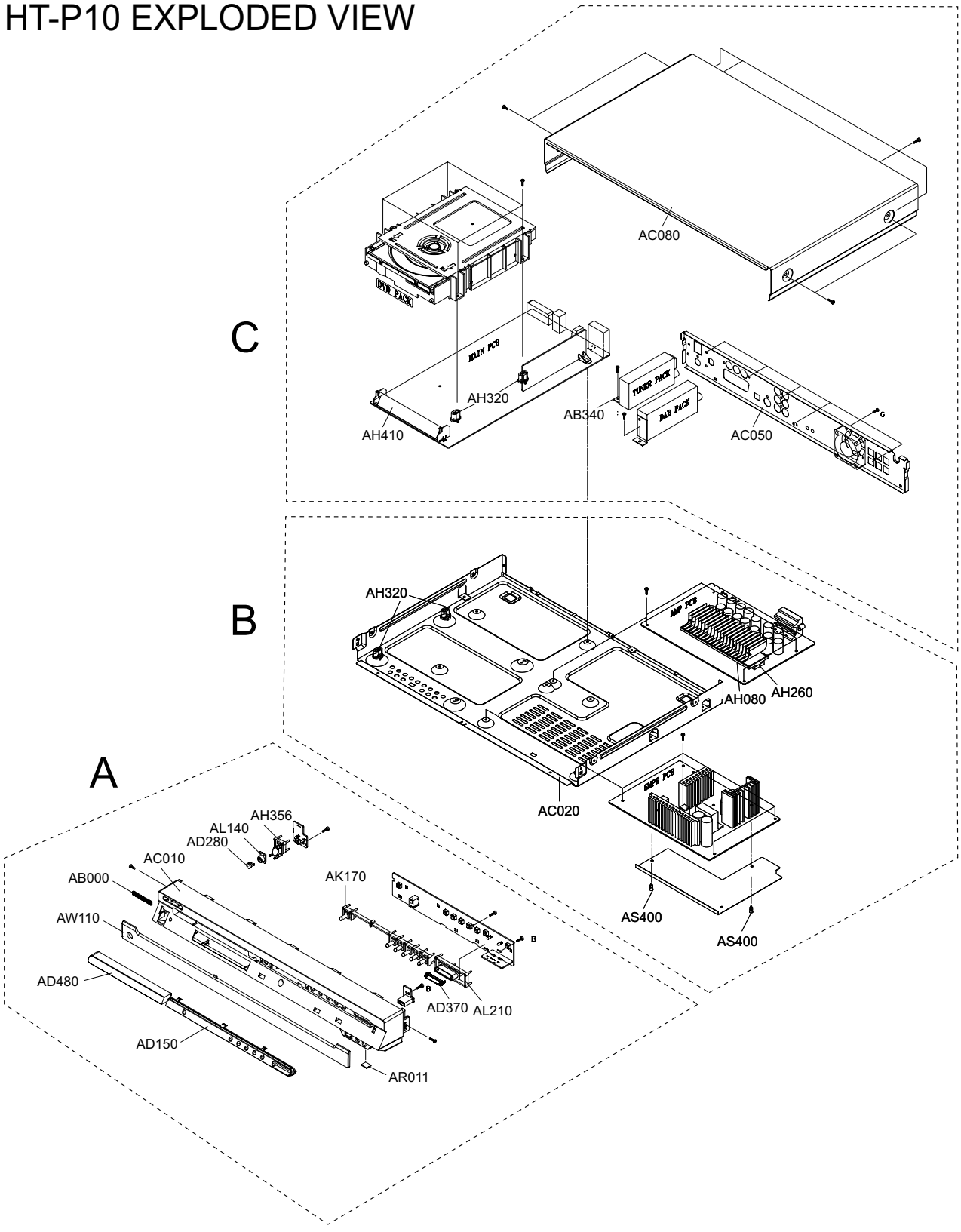
(CD-RW)


(DVD Single)

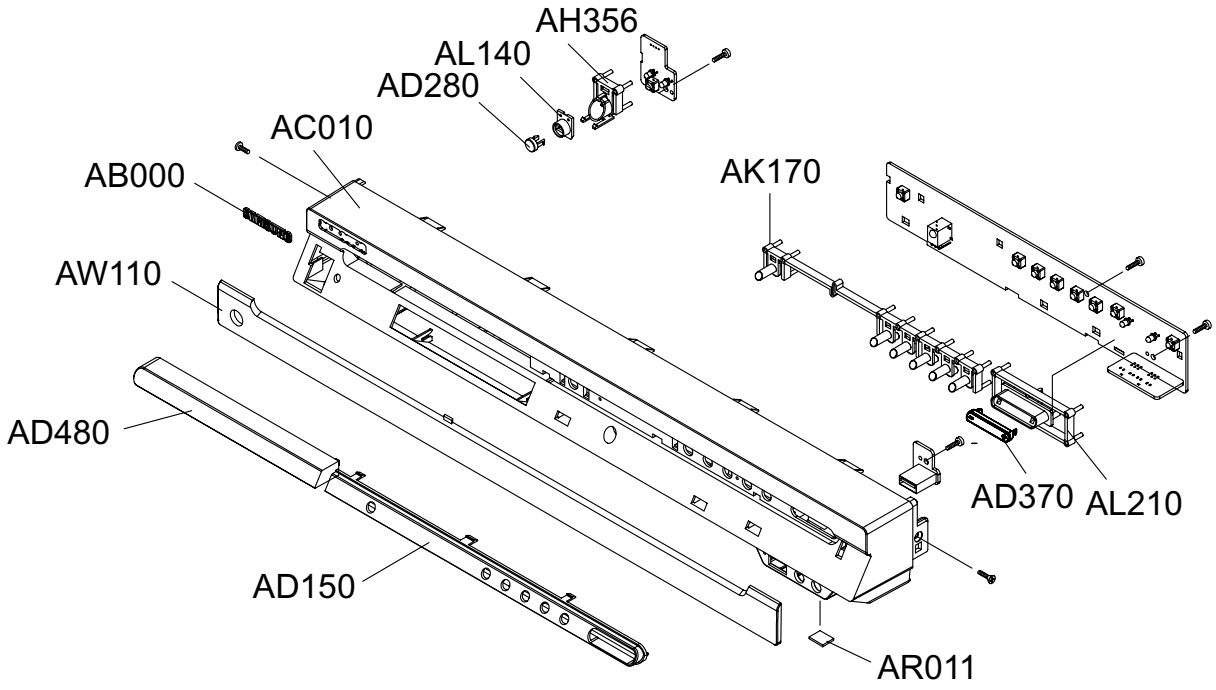

(DVD Dual)

7.Exploded Views and Parts List

1. Total Exploded View

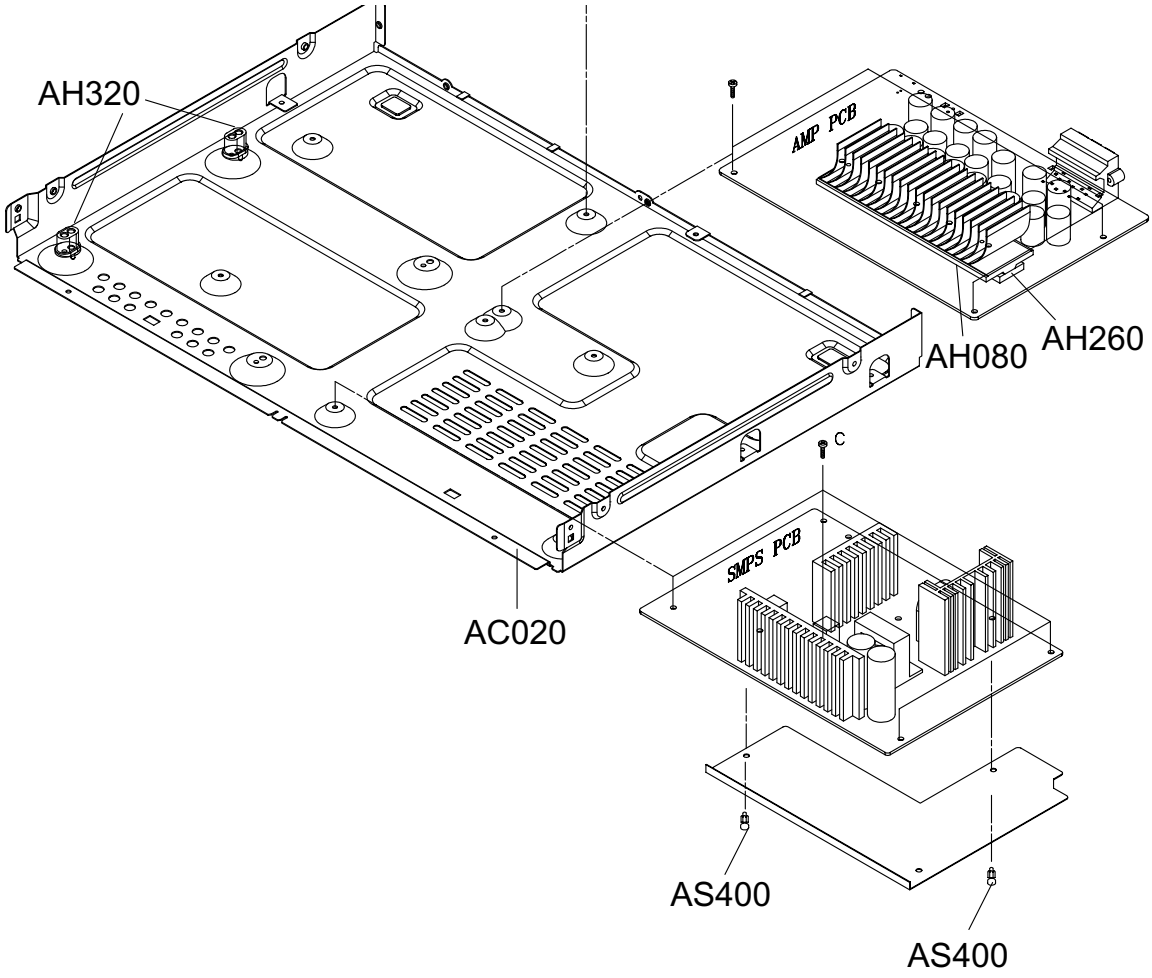


1-1. Exploded View (PART1)



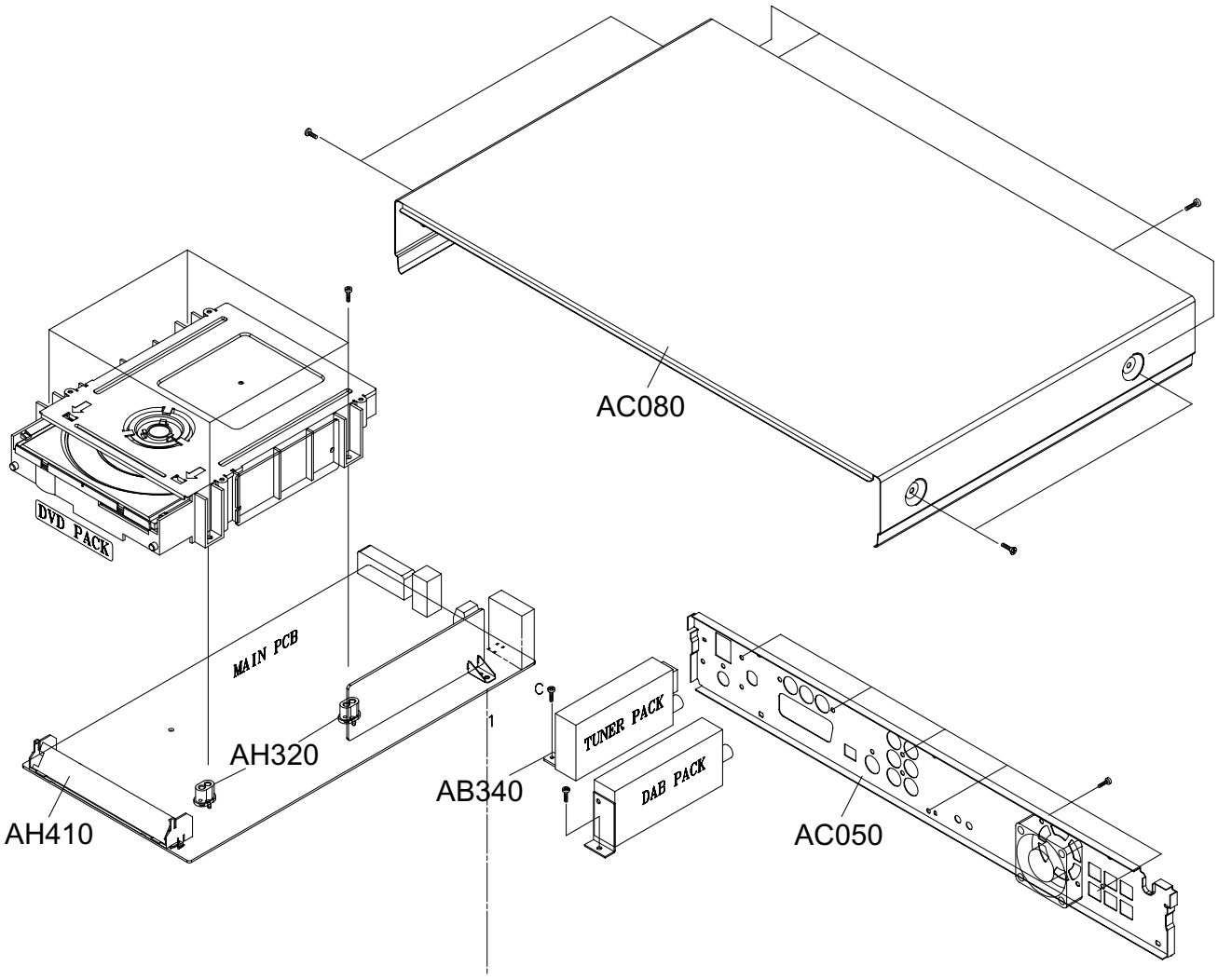
A

1-2. Exploded View (PART2)



B

1-2. Exploded View (PART2)



C

2. Parts List

Location	Code No.	Description	Specification	Q'ty	SNA	Remark
AB000	AH64-70003D	BADGE	AL	1		
AB340	AH61-01600A	BRKT-TUNER	SECC 1.0T	1		
AC010	AH64-03270C	CABINET-FRONT	HIPS L/GRY	1		P10 (EUR)
	AH64-03270D			1		P10 (NO EUR)
	AH64-03270F			1		RP16
	AH64-03270M			1		TP12
AC020	AH64-03260A	CABINET-BOTTOM	SECC 0.6T	1		
AC050	AH64-03269C	CABINET-REAR	SECC 0.5T	1		EUR
	AH64-03269D			1		NO EUR
AC080	AH64-03259A	CABINET-TOP		1		
AD150	AH64-03273B	DECO-FRONT	ABS GRAY	1		
AD280	AH64-03266B	DECO-POWER	ABS NATURAL	1		
AD370	AH64-03274B	DECO-VOLUME	ABS NATURAL	1		
AD480	AH64-03272B	DOOR-CD	ABS GRAY	1		
AH080	AH62-00135A	HEAT-SINK	AL SKIVE	1		
AH260	AH61-01796A	HOLDER-HEATSINK	ABS+GF30%	1		
AH320	AH61-01825A	HOLDER-MECHA	ABS BLK	4		
AH356	AH61-01823A	HOLDER-POWER	ABS WHT	1		
AH410	AH61-01826A	HOLDER-VFD	ABS BLK	1		
AK170	AH64-03268B	KNOB-FUNCTION	ABS GRAY	1		
AL140	AH67-00332A	LENS-POWER	PMMA MILKY	1		
AL210	AH67-00331A	LENS-VOLUME	PMMA MILKY	1		
AR011	AH73-00005A	RUBBER-FOOT	EVA 11.5*9	4		
AS400	AH61-40014A	SUPPORT-RIVET	PP	2		
AW110	AH64-03271C	WINDOW-FRONT	PMMA 3.0T	1		

8. Electrical Parts List

***** HT-P10T/XAP Parts List *****

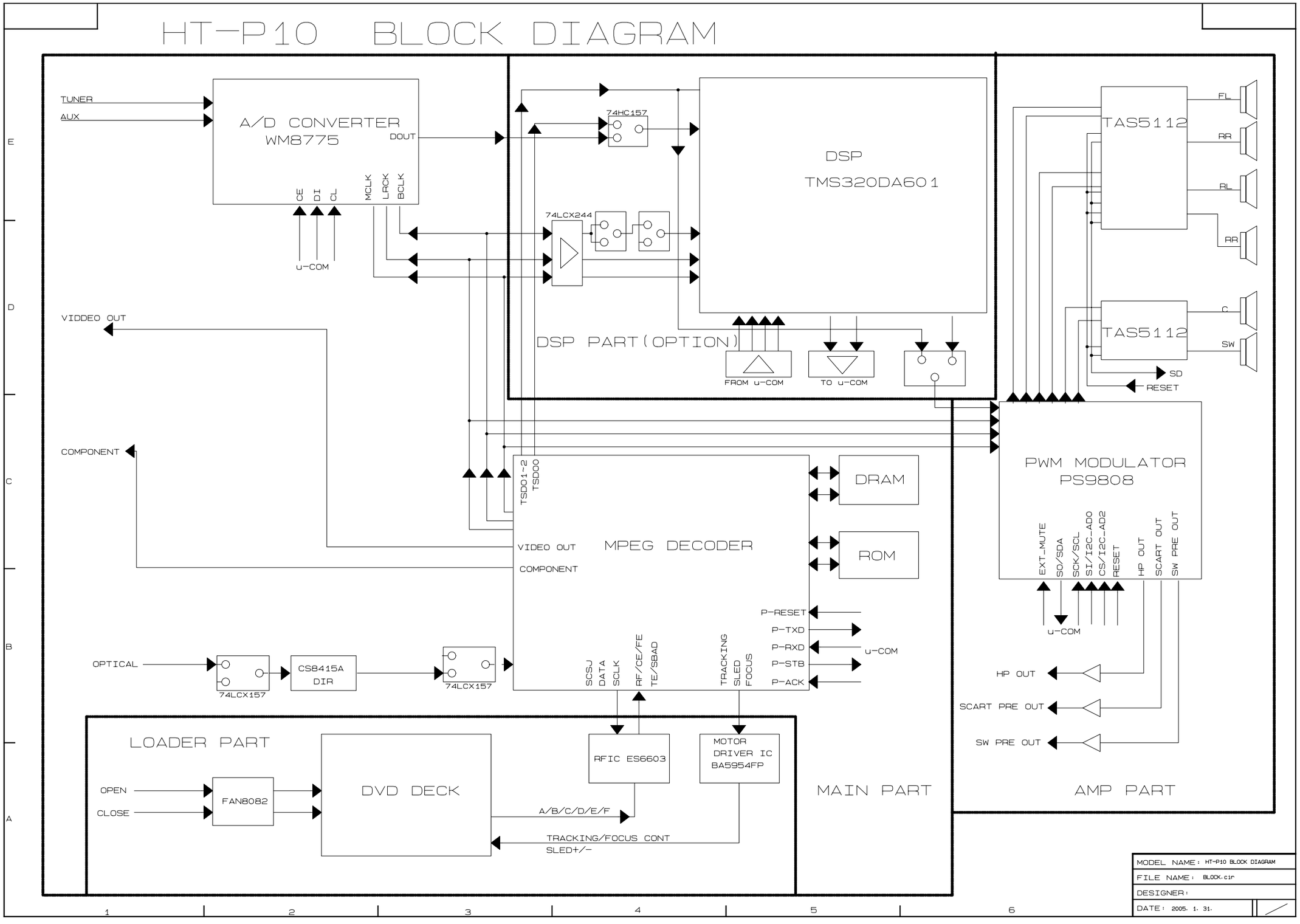
Location no.	Code no.	Description & Specification	Remarks
AB000	AH64-70003D	BADGE-BRAND;-,-,-,-,-,-,-	
AB100	AH61-01882B	BRACKET-DECK;HT-P10/30,SECC,1.0T,-,-,-,-	
AB235	AH61-01795A	BRACKET-HOLDER;SDM-D12,SECC,0.6,-,-,-,-	
AB260	AH61-10513A	BRACKET-PCB;DAT7000,SUN,T2.0,W85,L105,GR	
AB340	AH61-01600A	BRACKET-TUNER;HT-DS600/DS800,SECC 1.0T,-	
AC010	AH64-03270D	CABINET FRONT;HT-P10/NOEUR,HIPS 94HB,2.5	
AC020	AH64-03260A	CABINET-BOTTOM;HT-P30,SECC,0.6,430,-,-,-	
AC050	AH64-03269D	CABINET-REAR;HT-P10/NOEUR,SECC,0.5T,-,-	
AC080	AH64-03259A	CABINET-TOP;HT-P30,SECC,0.5,430,-,-,SIL,	
AC20	2401-000480	C-AL;10uF,20%,50V,GP,TP,5x11,5	
AC201	2401-000303	C-AL;100uF,20%,25V,GP,TP,6.3x11,5	
AC22	2203-000189	C-CER,CHIP;100nF,+80-20%,25V,Y5V,TP,1608	
AC23	2203-002398	C-CER,CHIP;22nF,10%,50V,X7R,TP,1608	
AC26	2203-001607	C-CER,CHIP;0.22nF,5%,50V,NP0,-,1608	
AC3	2401-000651	C-AL;2.2uF,20%,50V,GP,TP,4x7,5	
AC36	2203-000626	C-CER,CHIP;0.022nF,5%,50V,C0G,1608	
AC39	2401-000598	C-AL;1uF,20%,50V,GP,TP,4x7,5	
AC3L	2401-000455	C-AL;10uF,20%,35V,GP,TP,4x7mm,5	
AC40	2401-002042	C-AL;220uF,20%,10V,GP,TP,6.3x11,5	
AC41	2203-005171	C-CER,CHIP;1000nF,10%,16V,X7R,2012	
AC4L	2203-000236	C-CER,CHIP;0.1nF,5%,50V,C0G,1608	
AC56	2401-001975	C-AL;47uF,20%,16V,GP,TP,5x11mm,5mm	
AC6	2203-000972	C-CER,CHIP;47nF,10%,16V,X7R,TP,1608	
AC6R	2203-000998	C-CER,CHIP;0.047NF,5%,50V,C0G,TP,1608	
AC70	2203-000440	C-CER,CHIP;1nF,10%,50V,X7R,1608	
AC8L	2401-001994	C-AL;3.3UF,20%,50V,BP,TP,5X11MM,5	
ACW1	3711-000820	HEADER-BOARD TO CABLE;BOX,2P,1R,2.5MM,ST	
ACW2	AH39-00746A	LEAD CONNECTOR;HT-P10,-,-,4P,150mm,BLACK	
AD150	AH64-03273B	DECORATION-FRONT;HT-P10,ABS,-,-,-,-,GRAY	
AD280	AH64-03266B	DECORATION-POWER;HT-P30,ABS,-,-,-,-,-,CR	
AD3	0402-000309	DIODE-RECTIFIER;1SR154-400,400V,1A,SOD-1	
AD370	AH64-03274B	DECORATION-VOLUME;HT-P10,ABS,-,-,-,-,C	
AD480	AH64-03272B	DOOR-CD;HT-P10,ABS,-,-,-,-,GRAY,-	
AD5	0401-001099	DIODE-SWITCHING;1N4148WS,75V,150mA,SOD-3	
AD91	0404-000144	DIODE-SCHOTTKY;SB01-05CP,50V,100MA,SOT-2	
AG030	AH66-00216A	GEAR-PULLEY;CMS-SD100,TPE,-,-,-,BLACK,-,	
AH320	AH61-01825A	HOLDER-MECHA;HT-P30,ABS,-,-,-,-,-	
AH356	AH61-01823A	HOLDER-POWER;HT-P10,ABS,-,-,-,GRAY,-	
AH410	AH61-01962A	HOLDER-VFD;HT-P70,ABS 94HB,-,-,-,BLK,-	
AIC1	1204-002339	IC-MODULATOR;PS9808,QFP,100P,14x14mm,PLA	
AIC2	AH14-10004R	IC;M74HCU04,SOP,TAPE 14P	
AIC3	1002-001392	IC-A/D CONVERTER;WM8775EDS,24BIT,SSOP,28	
AIC3	1201-002053	IC-AUDIO AMP;TAS5112DFD,TSSOP,56P,14x6.1	
AIC5	1201-000163	IC-OP AMP;4560,SOP,8P,173MIL,DUAL,100V/m	
AK170	AH64-03268B	KNOB-FUNCTION;HT-P10,ABS,-,-,-,-,SILVER,	
AL140	AH67-00332A	LENS-POWER;HT-P30,PMMA,MILKY,-,-,-,-	
AL210	AH67-00331A	LENS-VOLUME;HT-P10,PMMA,MILKY,-,-,-,-	
AM020	AH31-00041A	MOTOR FAN;CD42NL100070,RDL4020S,0.06A,-,	
AMP H	AH61-01796A	HOLDER-H/SINK;HT-DS100N,ABS,-,-,-,-,-	
AP090	AH66-00219A	PULLEY-BELT;CMS-SD100,CR 1.5,-,-,-,-,-,-	
AQ1	0501-002184	TR-SMALL SIGNAL;KTD1304,NPN,200mW,SOT-23	
AQ1	0501-000303	TR-SMALL SIGNAL;KSA733,PNP,250mW,TO-92,T	
AQ2	0504-000156	TR-DIGITAL;KSR2103,PNP,200MW,22K/22K,SOT	
AQ3	0501-000422	TR-SMALL SIGNAL;KTA1273,PNP,-30V,-30V,-2	
AR10	2007-000122	R-CHIP;1.2Kohm,5%,1/10W,TP,1608	
AR12L	2007-000078	R-CHIP;1Kohm,5%,1/10W,TP,1608	
AR14	2007-000483	R-CHIP;1ohm,5%,1/8W,TP,2012	
AR15	2007-000116	R-CHIP;120ohm,5%,1/10W,TP,1608	
AR16	2007-000309	R-CHIP;10ohm,5%,1/10W,TP,1608	
AR21	2007-002807	R-CHIP;1.5ohm,5%,1/8W,TP,2012	
AR24	2007-000941	R-CHIP;47Kohm,5%,1/8W,TP,2012	
AR28	2007-000282	R-CHIP;100Kohm,5%,1/8W,TP,2012	
AR3	2007-000086	R-CHIP;5.6Kohm,5%,1/10W,TP,1608	
AR32	2003-000674	R-METAL OXIDE(S);39ohm,5%,1W,AA,TP,3.3x9	
AR33	2003-000481	R-METAL OXIDE(S);120ohm,5%,2W,AA,TP,4x12	
AR35	2007-000290	R-CHIP;100ohm,5%,1/8W,TP,2012	
AR4	2007-000130	R-CHIP;39Kohm,5%,1/10W,TP,1608	
AR5	2007-000125	R-CHIP;3.9Kohm,5%,1/10W,TP,1608	
AR61	2007-000109	R-CHIP;1Mohm,5%,1/10W,TP,1608	
AR65	2007-001806	R-CHIP;1.5ohm,5%,1/10W,BK,1608	
AR71	2007-000502	R-CHIP;2.2ohm,5%,1/8W,TP,2012	
AR8	2007-000091	R-CHIP;12Kohm,5%,1/10W,TP,1608	
AR9R	2007-000097	R-CHIP;47Kohm,5%,1/10W,TP,1608	
AS040	6003-000276	SCREW-TAPTITE;BH,+,B,M3,L10,ZPC(YEL),SWC	
AS040	6003-000264	SCREW-TAPTITE;PWH,+,B,M3,L6,ZPC(YEL),SWR	
AS040	6003-000279	SCREW-TAPTITE;BH,+,B,M3,L20,ZPC(YEL),SWC	
AS040	6003-001499	SCREW-TAPTITE;TH,+,B,M3,L9,SN PLT,SWRCH1	
AS040	6003-001561	SCREW-TAPTITE;BH,+,-,B,M3,L6,ZPC(YEL),SW	
AS040	6003-000275	SCREW-TAPTITE;BH,+,B,M3,L10,BLK ,SWCH101	
AS040	6003-000152	SCREW-TAPTITE;PH,+,B,M2,L10,ZPC(YEL),SWR	
AS040	6003-001375	SCREW-TAPTITE;BH,+,B,M3,L8,ZPC(YEL),SWRC	
AS040	6003-001446	SCREW-TAPTITE;BH,+,,M2,L5,NI PLT	
AS040	6003-001476	SCREW-TAPTITE;PWH,+,B,M2,L5,ZPC(YEL)	
AS259	AH61-01474A	SPRING ETC-DECK;CMS-SD100,SUS304,-,-,-,1	
AW110	AH64-03271C	WINDOW-FRONT;HT-P10/EXP,PMMA CLR,3.0T,-,	
AX1	2801-004354	CRYSTAL-UNIT;12.288MHZ,30PPM,ATS-49/U,18	
AZD1	0403-001064	DIODE-ZENER;RLZ5.1B,4.94-5.2V,500MW,LL-3	
BD11	3301-001069	BEAD-SMD;120ohm,1.6x0.8x0.8mm,200mA,TP,	
C11W	2203-000802	C-CER,CHIP;33nF,10%,50V,X7R,2012	
C31C	2203-000783	C-CER,CHIP;0.33nF,5%,50V,C0G,1608	
C3RR	2203-000206	C-CER,CHIP;100nF,10%,50V,X7R,2012	
C4W	2401-000847	C-AL;220uF,20%,35V,GP,TP,10x12mm,5m	
C5FL	2305-000412	C-FILM,LEAD-PEF;470nF,5%,63V,TP,-,5mm	
C6RR	2203-000260	C-CER,CHIP;10nF,10%,50V,X7R,TP,2012	
C7RR	2401-000832	C-AL;220uF,20%,25V,GP,TP,8x11.5,5	
CD000	AH61-01741A	BASE-MAIN;K100,ABS,-,-,-,-,-	
CD101	AH65-30010A	CLAMP-WIRE;-,-,-,-,-,-	
CD300	AH66-00217A	GEAR-TRAY;CMS-SD100,POM,-,-,-,BLACK,-,-,	
CD340	AH66-00262A	LEVER-LIFT;-,ABS,-,-,-,-,BLK,-	
CD380	AH66-00215A	PULLEY MOTOR;CMS-SD100,POM,-,WHITE,-,-,-	
CD520	3409-001138	SWITCH-DETECTOR;5V DC,1A,DPST,30GF,-	
CN1	3711-005155	HEADER-BOARD TO CABLE;BOX,5P,1R,2MM,SMD-	
DC34	2402-001042	C-AL,SMD;100uF,20%,16V,GP,TP,6.6x6.6x5.	
DD2	0403-001062	DIODE-ZENER;UDZ4.7B,4.55-4.75V,200MW,SOD	
DQ2	0504-000128	TR-DIGITAL;-,NPN,200MW,22K/22K,SOT-23,TP	
DR28	2007-000075	R-CHIP;220ohm,5%,1/10W,TP,1608	
DR39	2007-000124	R-CHIP;2.2Kohm,5%,1/10W,TP,1608	
DR40	2007-000455	R-CHIP;18Kohm,1%,1/10W,TP,1608	
DR40	2007-000458	R-CHIP;18Kohm,5%,1/10W,TP,1608	
DR43	2007-000094	R-CHIP;22Kohm,5%,1/10W,TP,1608	
DR44	2007-000120	R-CHIP;680ohm,5%,1/10W,TP,1608	
DR52	2007-000090	R-CHIP;10Kohm,5%,1/10W,TP,1608	
DR57	2007-000082	R-CHIP;3.3Kohm,5%,1/10W,TP,1608	
DR60	2007-000102	R-CHIP;100Kohm,5%,1/10W,TP,1608	
EBD9	3301-001495	BEAD-SMD;120ohm,2012,2500mA,TP,115ohm/1	
FC1	2203-000979	C-CER,CHIP;47nF,10%,50V,X7R,TP,2012	
FCON1	3708-000492	CONNECTOR-FPC/FFC/PIC;9P,1.25MM,STRAIGHT	
FCW1	AH39-00738A	LEAD CONNECTOR;HT-P30,-,-,4P,250mm,-,-,5	
FCW3	3711-000028	HEADER-BOARD TO CABLE;BOX,4P,1R,2MM,STRA	
FJ3	3811-000389	WIRE-NO SHEATH CU;SPCW,300V,52.4mm,1/0.5	
FR1	2007-000468	R-CHIP;1Kohm,5%,1/8W,TP,2012	
FR15	2007-000762	R-CHIP;330OHM,1%,1/8W,TP,2012	
FR16	2007-000572	R-CHIP;220ohm,5%,1/8W,TP,2012	
FR2	2007-000241	R-CHIP;1.5Kohm,5%,1/8W,TP,2012	
FR3	2007-000267	R-CHIP;1.8Kohm,5%,1/8W,TP,2012	
FR4	2007-000493	R-CHIP;2.2Kohm,5%,1/8W,TP,2012	
FR5	2007-000686	R-CHIP;3.3Kohm,5%,1/8W,TP,2012	
FR6	2007-000872	R-CHIP;4.7Kohm,5%,1/8W,TP,2012	
FR7	2007-001177	R-CHIP;8.2Kohm,5%,1/8W,TP,2012	
FR8	2007-000457	R-CHIP;18Kohm,5%,1/8W,TP,2012	
HC20	2203-001640	C-CER,CHIP;0.39nF,10%,50V,X7R,TP,1608	
HC23	2203-000315	C-CER,CHIP;0.12NF,5%,50V,C0G,TP,1608	
HC26	2203-001052	C-CER,CHIP;0.56nF,10%,50V,X7R,TP,1608	
HEAT	AH62-00135A	HEAT SINK;HT-DS100N,AL,-,-,-,-,-	
HEATS	AH62-00062G	HEAT SINK-TR;HT-DS400,AL EXTR,-,-,-,-,-	
HL23	2703-001254	INDUCTOR-SMD;1.8uH,10%,2012	
JP6	AH37-00005A	JACK-RCA;1P,S-440B,YELLOW,-,SHIELD PLAT	
L11W	2702-001028	INDUCTOR-RADIAL;22UH,10%,10.3X18MM	
LED1	0601-001238	LED;ROUND,RED,3.1mm,697nm,3.8x5.2m	
LED2	0601-001432	LED;ROUND,BLUE,3mm,455nm	
MC24	2203-000815	C-CER,CHIP;0.033NF,5%,50V,C0G,TP,1608	
MC3	2203-005065	C-CER,CHIP;1000nF,+80-20%,10V,Y5V,1608	
MC31	2203-001656	C-CER,CHIP;0.47nF,5%,50V,NP0,TP,1608	
MC32	2203-000888	C-CER,CHIP;4.7nF,10%,50V,X7R,TP,1608	
MC40	2203-001103	C-CER,CHIP;6.8nF,10%,50V,X7R,TP,1608,-	
MC43	2203-000646	C-CER,CHIP;0.024NF,5%,50V,C0G,TP,1608	
MC44	2203-000681	C-CER,CHIP;0.027nF,5%,50V,C0G,1608	
MC5	2203-005221	C-CER,CHIP;15nF,10%,50V,X7R,TP,1608,-	
MC6	2203-000560	C-CER,CHIP;220nF,+80-20%,25V,Y5V,TP,1608	
MC88	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
MCON1	3708-001122	CONNECTOR-FPC/FFC/PIC;26P,1.25MM,STRAIGH	
MCON1	AH39-00736A	LEAD CONNECTOR;HT-P30,-,-,8P,60mm,-,-,PH	
MCON2	AH39-00737A	LEAD CONNECTOR;HT-P30,-,-,14P,60mm,-,-,5	
MCON3	3708-001029	CONNECTOR-FPC/FFC/PIC;9P,1.25MM,STRAIGHT	
MCON6	3708-000448	CONNECTOR-FPC/FFC/PIC;6P,1.25MM,STRAIGHT	
MCON8	3708-001051	CONNECTOR-FPC/FFC/PIC;13P,1.25MM,ANGLE,S	
MDIC1	1003-001764	IC-MOTOR DRIVER;IP5954,SSOPH,28P,10x18.4	
MDIC2	1003-001508	IC-MOTOR DRIVER;FAN8082DTF,SOP,8P,200MIL	
MDIC3	1201-001842	IC-OP AMP;TL3472CD,SO,TP,8P,-,DUAL,-,PAL	
MIC1	0801-002683	IC-CMOS LOGIC;74HCT245,TRANSCEIVER,TSSOP	
MIC3	1107-001505	IC-FLASH MEMORY;49BV162AT,1Mx16/2Mx8Bit,	
MIC4	1204-002224	IC-PAL/NTSC DECODER;ES6698FD,PQFP,208P,2	
MIC6	1103-001292	IC-EEPROM;524A40X21,256x8,SOP,8P,5.13x3.	
MIC8	1105-001535	IC-DRAM;M12L128168A-7T,4X2MX16BIT,TSOP	
MJ1	3710-002203	SOCKET-BOARD TO CABLE;34P,2R,2mm,STRAIGH	
MJ4	3708-002023	CONNECTOR-FPC/FFC/PIC;6P,1MM,SMD-S,TIN,N	
MR147	2007-000077	R-CHIP;470ohm,5%,1/10W,TP,1608	
MR153	2007-000119	R-CHIP;560ohm,5%,1/10W,TP,1608	
MR22	2007-000962	R-CHIP;5.1Kohm,1%,1/10W,TP,1608	
MR29	2007-000100	R-CHIP;68Kohm,5%,1/10W,TP,1608	
MR30	2007-000093	R-CHIP;20Kohm,5%,1/10W,TP,1608	
MR36	2007-000087	R-CHIP;6.8Kohm,5%,1/10W,TP,1608	
MR54	2007-000694	R-CHIP;3.3ohm,5%,1/8W,TP,2012	

Location no.	Code no.	Description & Specification	Remarks
MR65	2007-000643	R-CHIP;270ohm,5%,1/10W,TP,1608	
MR66	2007-000799	R-CHIP;360ohm,5%,1/10W,TP,1608	
MR68	2011-000651	R-NET;10ohm,5%,1/16W,L,CHIP,8P,TP,32	
MR73	2007-000084	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	
MR85	2007-000118	R-CHIP;390ohm,5%,1/10W,TP,1608	
MR86	2007-000608	R-CHIP;240ohm,5%,1/10W,TP,1608	
MR9	2007-000029	R-CHIP;0ohm,5%,1/8W,TP,2012	
MR97	2007-000113	R-CHIP;33ohm,5%,1/10W,TP,1608	
MREG1	1203-002425	IC-POSI.FIXED REG.;AIC1117A-33PY,SOT-223	
MREG2	1203-002935	IC-POSI.ADJUST REG.;AIC1117ACE,TO-252,3P	
OPIC4	0801-002518	IC-CMOS LOGIC;74LCX157,2-INPUT MULTIPLEX	
PC2	2402-000107	C-AL,SMD;100uF,20%,6.3V,GP,TP,6.6x6.6x5	
PC24	2401-001508	C-AL;47uF,20%,16V,GP,TP,6.3x5,5	
PC3	2401-001364	C-AL;470uF,20%,16V,GP,TP,10x12.5,5	
PC9	2401-001102	C-AL;330uF,20%,16V,GP,TP,8x11.5mm,5	
PS300	AH59-01530C	SPEAKER SYSTEM;PS-SP10,XAP,-,-,-,-,-,-,-	
PS300	AH59-01531C	SPEAKER SYSTEM;PS-WP10,XAP,-,-,-,-,-,-,-	
R100	2007-000312	R-CHIP;10ohm,5%,1/4W,TP,3216	
R1FL	2007-000072	R-CHIP;47ohm,5%,1/10W,TP,1608	
R2	2007-000134	R-CHIP;33Kohm,5%,1/10W,TP,1608	
R21FL	2007-000034	R-CHIP;1OHM,5%,1/4W,TP,3216	
R31W	2007-000462	R-CHIP;18ohm,5%,1/8W,TP,2012	
R4RL	2007-000253	R-CHIP;1.5ohm,5%,1/4W,TP,3216	
R6RL	2007-001224	R-CHIP;9.1Kohm,5%,1/8W,TP,2012	
R9RR	2007-000300	R-CHIP;10Kohm,5%,1/8W,TP,2012	
RC15	2203-001222	C-CER,CHIP;0.82NF,10%,50V,X7R,TP,1608	
RC25	2203-000357	C-CER,CHIP;0.15NF,5%,50V,C0G,TP,1608	
RC26	2203-000257	C-CER,CHIP;10nF,10%,50V,X7R,1608	
RC27	2203-000575	C-CER,CHIP;220nF,10%,25V,X7R,2012	
RC29	2203-001634	C-CER,CHIP;33nF,10%,50V,X7R,TP,1608,1.6m	
RC31	2203-000975	C-CER,CHIP;47nF,10%,25V,X7R,TP,1608,-	
RC7	2402-001009	C-AL,SMD;100uF,20%,6.3V,GP,TP,5.3x5.3x5	
RC9	2203-000491	C-CER,CHIP;2.2nF,10%,50V,X7R,TP,1608,-	
RCN1	3708-001765	CONNECTOR-FPC/FFC/PIC;24P,0.5MM,SMD-S,SN	
RCN2	3711-004442	HEADER-BOARD TO BOARD;NOWALL,34P,2R,2mm,	
RD1	0407-000116	DIODE-ARRAY;DAP202K,80V,100mA,CK2-3,SOT-	
REM_E	0609-001189	MODULE REMOCON;HORIZONTAL,16.4MM,TR	
RIC1	1201-002059	IC-RF AMP;ES6603SF,LQFP,64P,10X10MM,SING	
RQ5	0501-000632	TR-SMALL SIGNAL;2SB1197K,PNP,200mW,SOT-2	
RR34	2007-000071	R-CHIP;22ohm,5%,1/10W,TP,1608	
RR6	2007-000308	R-CHIP;10ohm,5%,1/8W,TP,2012	
SPK1	3716-001132	TERMINAL-BLOCK;SOLDER,4P,-,-,-	
SPK2	3716-001173	TERMINAL-BLOCK;SOLDER,8P,12.5MM,60V,7A	
SW2	3404-000165	SWITCH-TACT;12V,50mA,160gf,6x6mm,SPST	
UC1	2401-001952	C-AL;4.7uF,20%,50V,GP,TP,5x7mm,5mm	
UC3	2409-000123	C-EDL;47000uF,4uA,5.5V,-,BK,-,5mm	
UC56	2203-005249	C-CER,CHIP;100nF,10%,50V,X7R,TP,1608,-	
UC57	2401-000042	C-AL;100uF,20%,16V,GP,TP,6.3x7,5	
UC6	2401-001931	C-AL;220nF,20%,50V,-,TP,4x7mm,5	
UD4	0401-001090	DIODE-SWITCHING;1SS355,80V,100MA,SOD-323	
UIC1	AH11-00184C	IC MASK ROM;LC875C64B-56P4,HT-P30,48K,-,	
UIC2	1003-001708	IC-VFD;S5G5128A,LQFP,64P,1063MIL,-,-	
UQ1	0501-000341	TR-SMALL SIGNAL;KSC1623-L,NPN,200mW,SOT-	
UR15	2007-001010	R-CHIP;51Kohm,5%,1/10W,TP,1608	
UR19	2007-000081	R-CHIP;2.7Kohm,5%,1/10W,TP,1608	
UR2	2007-000402	R-CHIP;150ohm,5%,1/10W,TP,1608	
UR4	2007-000106	R-CHIP;220Kohm,5%,1/10W,TP,1608	
UR92	2007-000074	R-CHIP;100ohm,5%,1/10W,TP,1608	
VC31	2401-000027	C-AL;4.7uF,20%,50V,GP,TP,5x11,5	
VC38	2401-001092	C-AL;330uF,20%,10V,GP,-,8x11.5,2.5m	
VC51	2203-000280	C-CER,CHIP;0.01NF,0.5PF,50V,C0G,TP,1608	
VFD1	AH07-00153A	VF DISPLAY;HNV-12SM87T,HT-P30,118.2 x 16	
VJ3	3722-002147	JACK-PIN;3P,NI,RED/BLU/GRN,ANGLE	
VJ5	3722-002042	JACK-PIN;2P/2C,NI,WHT/RED,ANGLE	
VL27	2703-000272	INDUCTOR-SMD;1.2uH,10%,2012	
VQ6	0501-000002	TR-SMALL SIGNAL;KSA812,PNP,150MW,SOT-23,	
VR1	2007-000115	R-CHIP;82ohm,5%,1/10W,TP,1608	
VR16	2007-000076	R-CHIP;330ohm,5%,1/10W,TP,1608	
VR51	2007-001134	R-CHIP;68ohm,5%,1/10W,TP,1608	
VR66	2007-000070	R-CHIP;0ohm,5%,1/10W,TP,1608	
X2	2801-004284	CRYSTAL-SMD;27MHZ,10PPM,28-AAN,20PF,30OH	
XD13	0401-001110	DIODE-SWITCHING;-,80V,100MA,SOD-523,TP	
X-TAL	2802-001174	RESONATOR-CERAMIC;10MHZ,0.5%,BK,8X3.5X3M	
	AH81-01780D	A/S PART-SUBWOOFER SPK SYSTEM;PS-WP10E,-	
	3101-001300	MOTOR-DC;2670RPM,9G.CM,3.9V,160MA	
	AH59-01592A	DECK-CD;-,CMS-S75RB,MAGNET,23.2mm,3V,S	
	AH92-02320A	ASSY PCB;HT-P10/30,SERVO PCB	
	AH81-01780B	A/S PART-FRONT SPK SYSTEM;PS-FP10E,-,-,H	
	AH81-01780C	A/S PART-CENTER SPK SYSTEM;PS-CP10E,-,-,	
	AH81-01780K	A/S PART-REAR SPK SYSTEM;PS-RP10E,-,-,HT	
	AH81-01780P	SPEAKER;PS-P10,SPK CORD ASS`Y,front/ce	
	AH81-01780L	SPEAKER;SPK UNIT-FRONT,-,-,-,-,-,-	
	AH81-01780M	SPEAKER;PS-P10,SPK UNIT-REAR,-,-,-,-,-	
	AH81-01780G	A/S PART-NET FRONT;PS-CP10E,-,-,NET FRON	
	AH81-01780J	A/S PART-FRONT PANEL;PS-WP10E,-,-,FRONT	
	AH81-01780E	A/S PART-NET FRONT;PS-SP10E,-,-,NET FRON	
	AH81-00924Q	A/S PART-TERMINAL;PS3510,-,-,TERMINAL,PU	
	AH81-01431C	A/S PART-NET FRAME;PSWS100E,-,-,-,NET FR	
	AH81-01780N	SPEAKER;PS-P10,SPK UNIT-S.W,-,-,-,-,-	
	AH39-50001K	WIRE HARNESS;RING,1007#24,140MM,BLK	
	AH63-00384A	SHIELD-SPK,8;HT-DL100,SPTE 0.3T,-,-,-,-,	
	AH63-00385A	SHIELD-SPK,4;HT-DL100,SPTE 0.3T,-,-,-,-,	
	AH39-50001H	WIRE HARNESS;RING,1007#24,100MM,BLK	

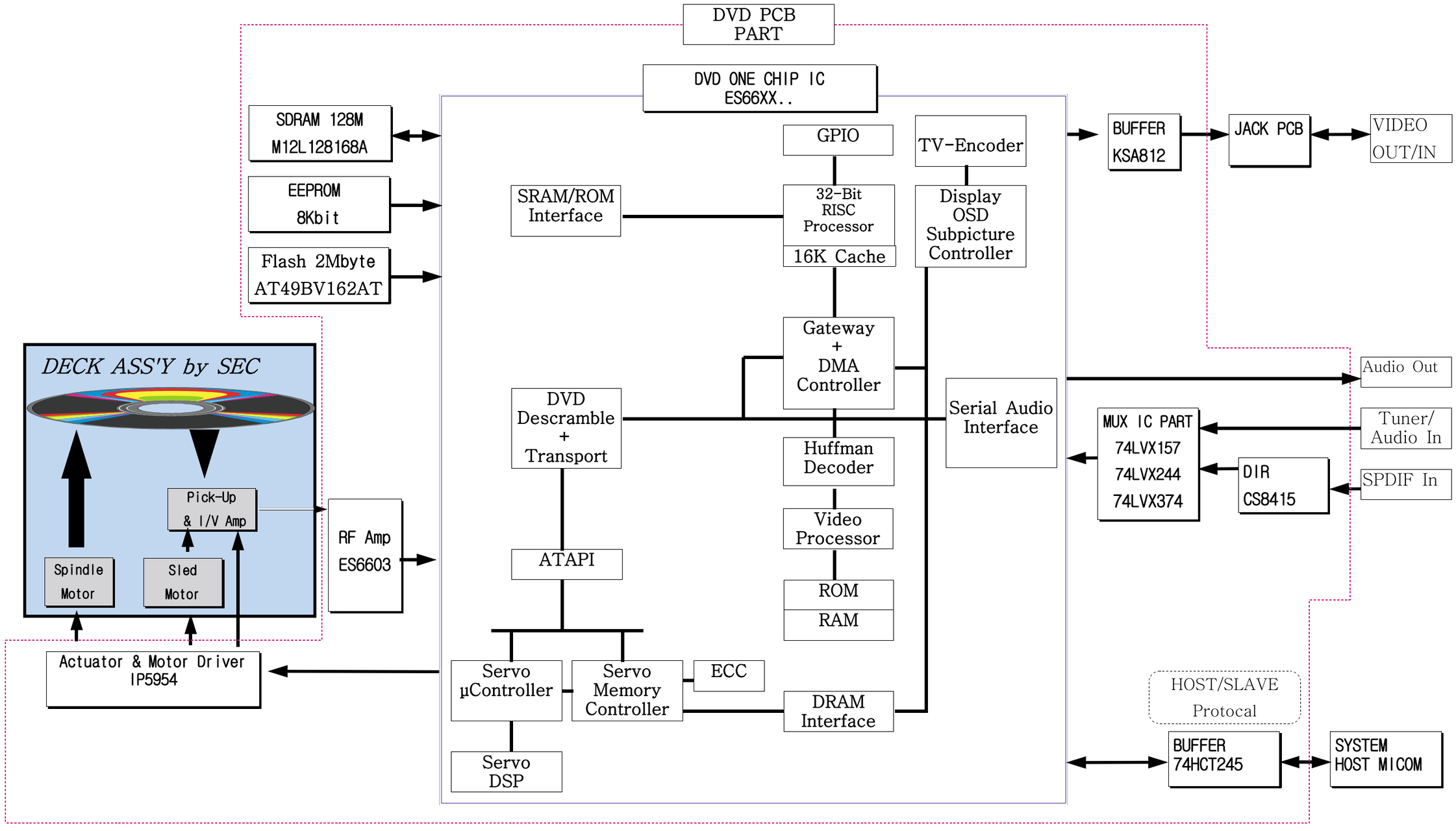
Location no.	Code no.	Description & Specification	Remarks
	3301-000132	CORE-FERRITE;AC,28.8x19.3x7.5mm,1400,290	
	0205-001109	GREASE-HARD;DM5231,HARD,1KG/CAN	
	3301-001760	CORE-FERRITE;-,33x12x8mm,-,-	
	3809-001627	CABLE-FLAT;30V,80C,90mm,6P,1mm,UL20696	
	3809-001630	CABLE-FLAT;30V,80C,175mm,24P,0.5mm,UL206	
	AH39-00708A	WIRE HARNESS;DVD-K100,L/W,-,5,90,WHT,-,-	
	AH61-01742A	BODY CLAMPER-UPPER;-,POM,0.8,-,-,-,WHT,-	
	AH61-02040A	BODY CLAMPER-LOWER;SDM-D12,POM,1,-,-,-,W	
	AH63-00695A	TRAY-DISK;SDM-D11,ABS,-,-,-,-,GRAY,-	
	AH66-00261A	CAM-SLIDE;K100,POM,-,-,WHT,-,-,-,-	
	3809-001659	CABLE-FLAT;30V,80C,130mm,13P,1.25mm,UL28	
	3809-001662	CABLE-FLAT;30V,80,110mm,9P,1.25mm,UL2896	
	3809-001670	CABLE-FLAT;30V,80,120MM,26P,1.25MM,-	
	AH39-00258U	CBF-POWER CORD;MXK55V,-,EP2,125V,7A,1830	
	AH39-40001V	CABLE-AUDIO CABLE;-,-,1P-1P,3000MM,-,-,-	
	AH40-00075B	TUNER-PACK;4496 PE01 FM/AM,-,-,-,-,-,-,-	
	AH42-00018A	ANTENNA-FM;T150S1F-1,-,-,-,-,-,1500#*50m	
	AH42-00019A	ANT LOOP;S0160BL-16,HT-DS665T,9uH,-,1KH	
	AH44-00078A	SMPS;HT-P10,ORTP-983,AC to DC,180W,	
	AH59-01511B	REMOCON-ASSY;HT-P10,ASIA,-,-,57KEY,-,-,-	
	AH59-01615B	DECK-MECHA(S75);SDM-D12,S75,-,-,-,-,-,-	
	AH68-01660K	MANUAL USERS;HT-P10,SSA,ENG(NO EUR),-,-,	
	AH68-01660L	MANUAL USERS;HT-P10,SELA_PA,ENG/SPA(NO E	
	AH92-02312B	ASSY PCB-MAIN;HT-P10TH,-	
	AH92-02313A	ASSY PCB;HT-P10,AMP PCB ASSY	
	AH92-02314A	ASSY PCB;HT-P10,FRONT PCB ASSY	

9. Block Diagram

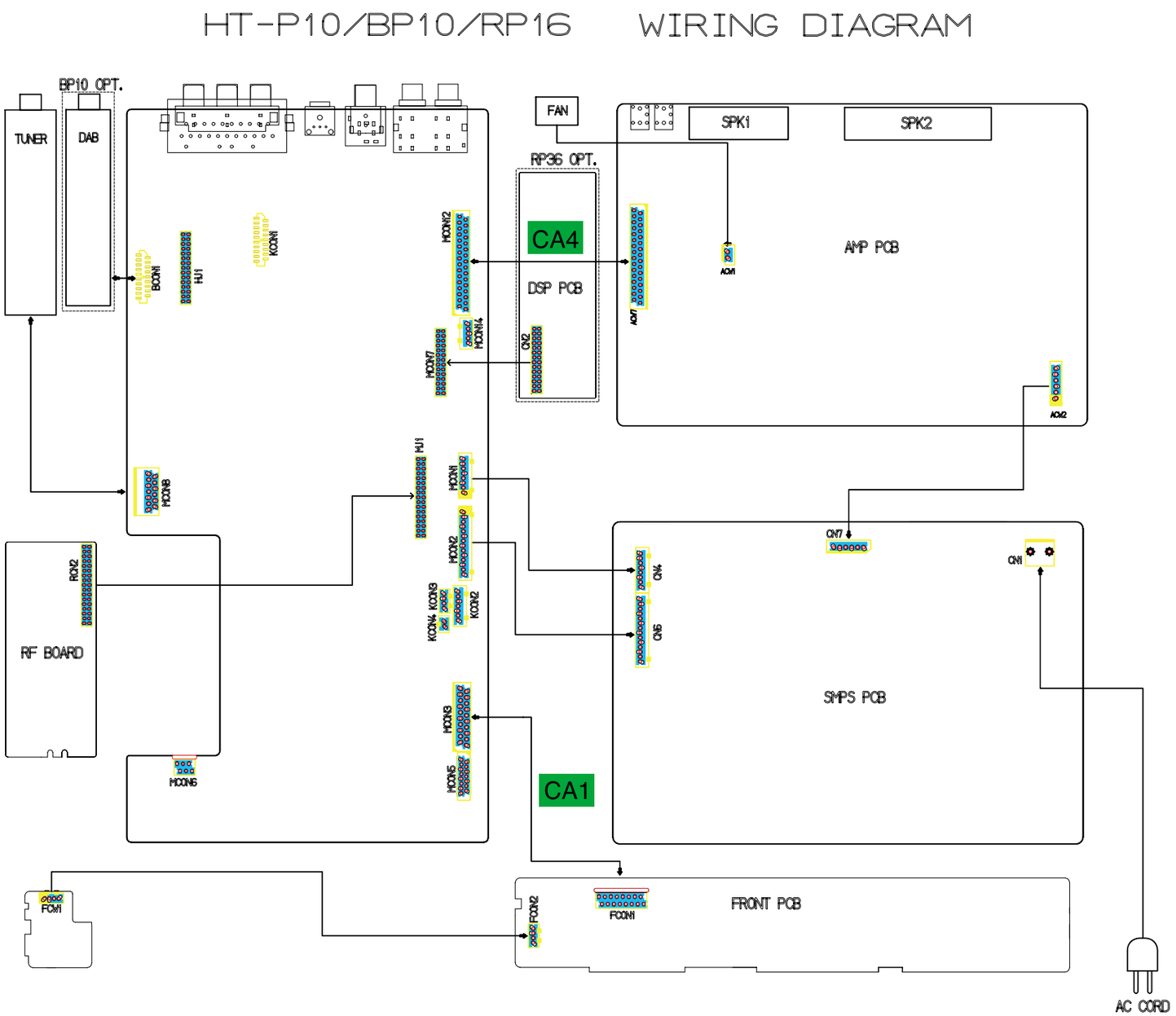
1. MAIN Part



DVD BLOCK DIAGRAM



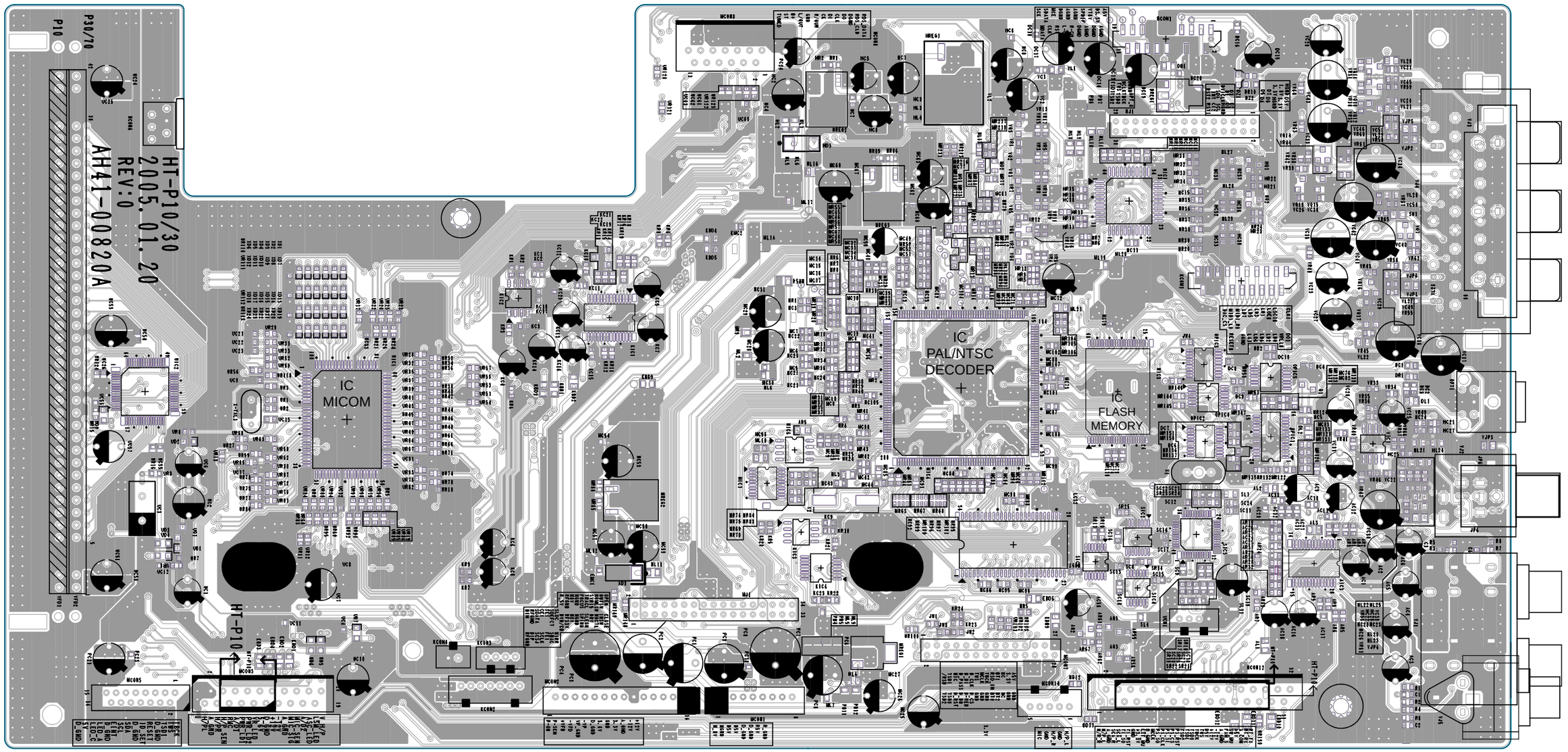
10. Wiring Diagram

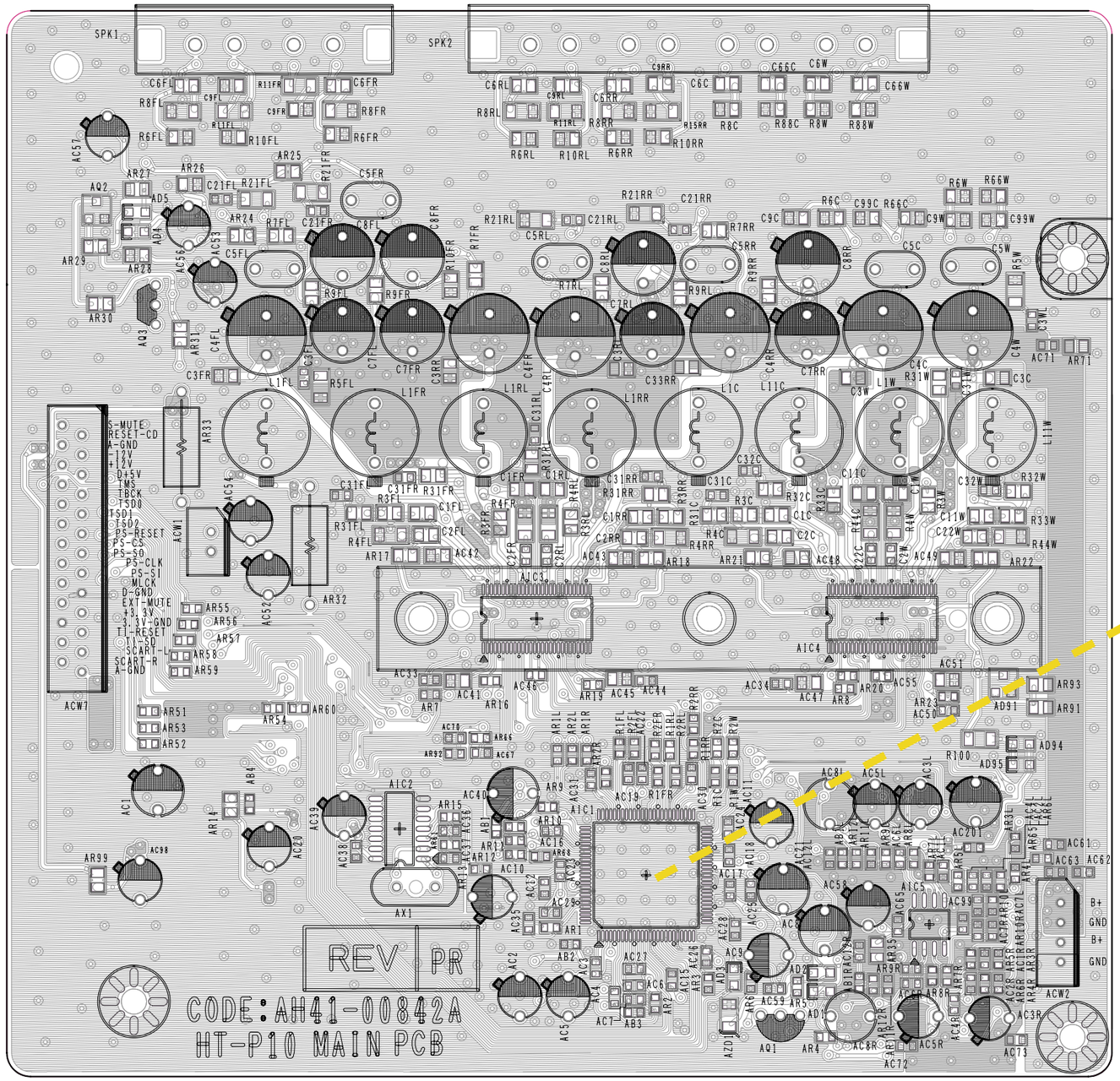


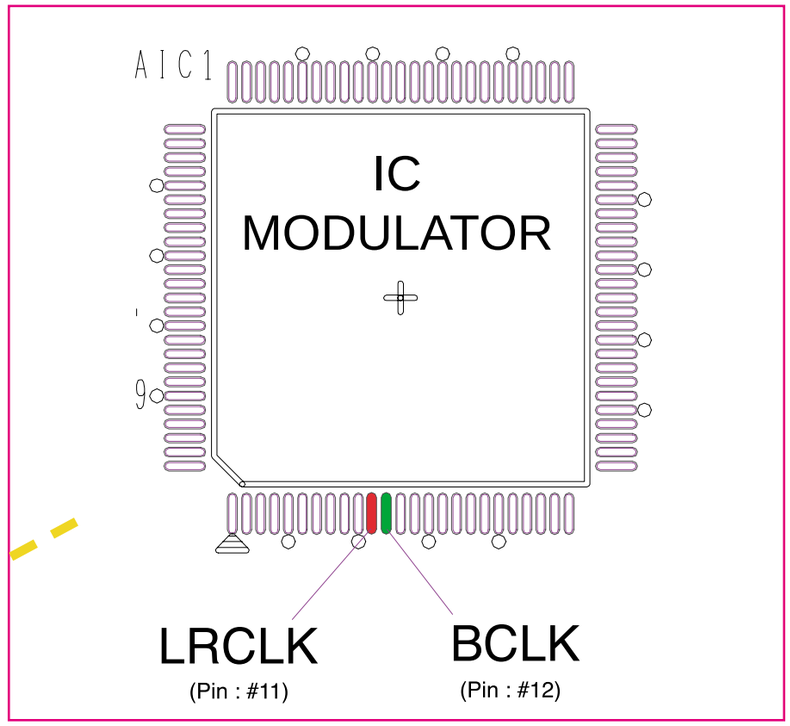
Cable Location	Code No.	Description	Specification
CA1	3809-001468	CABLE-FLAT	30V, 80C,150MM,9P,1.25MM,UL2896
CA4	3809-001670	CABLE-FLAT	30V,80,120MM,26P,1.25MM

11. PCB Diagram

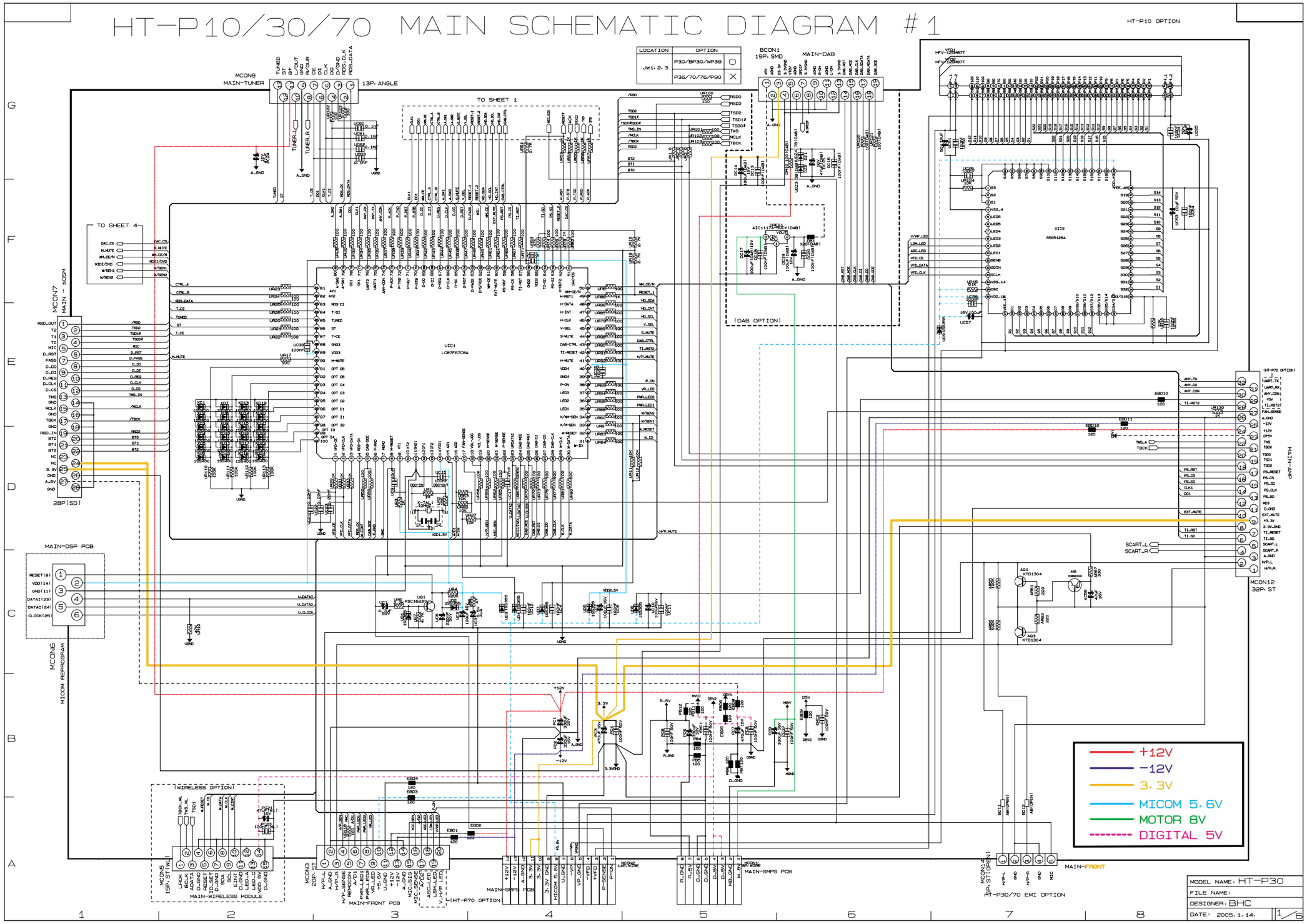
1. MAIN

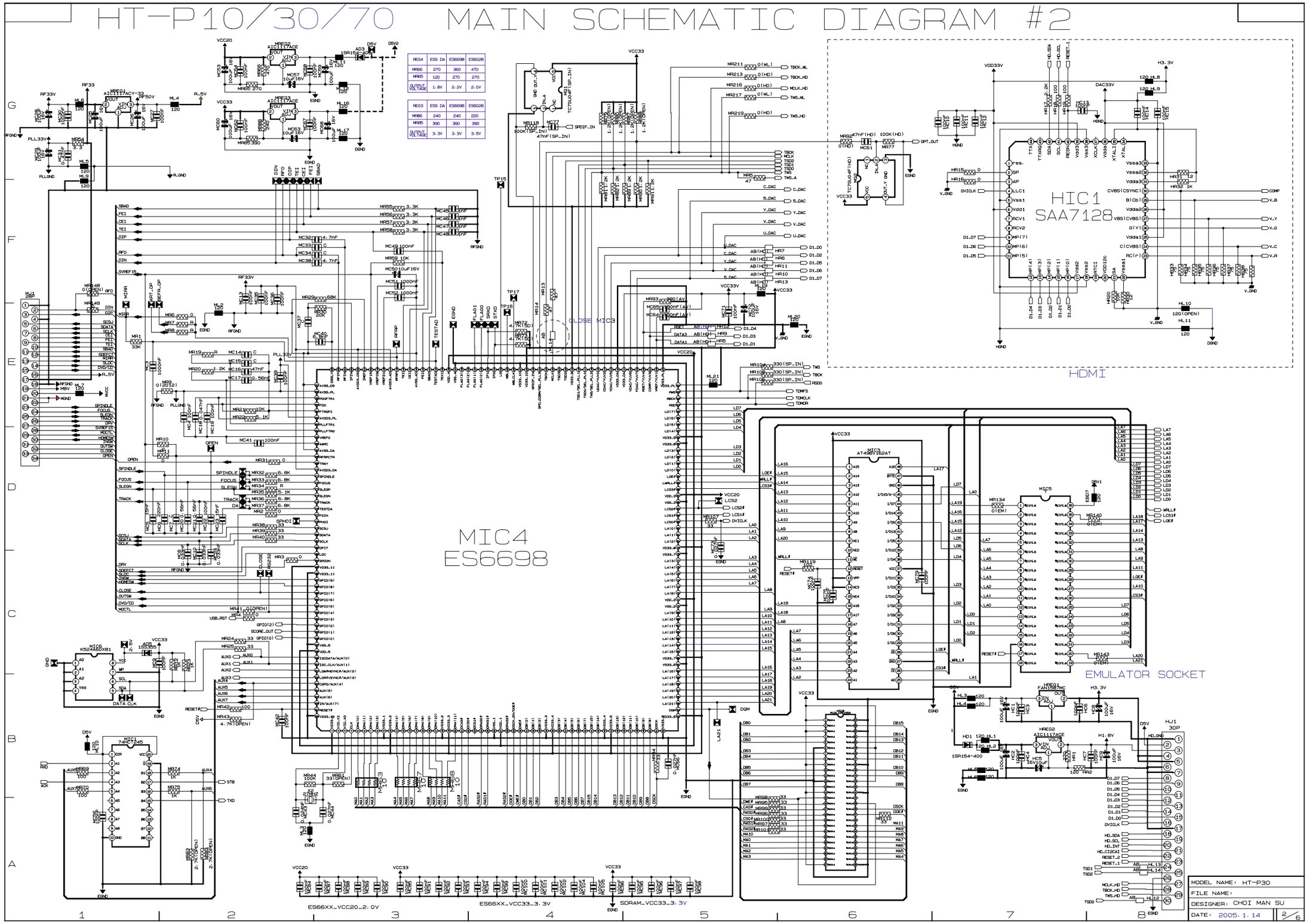


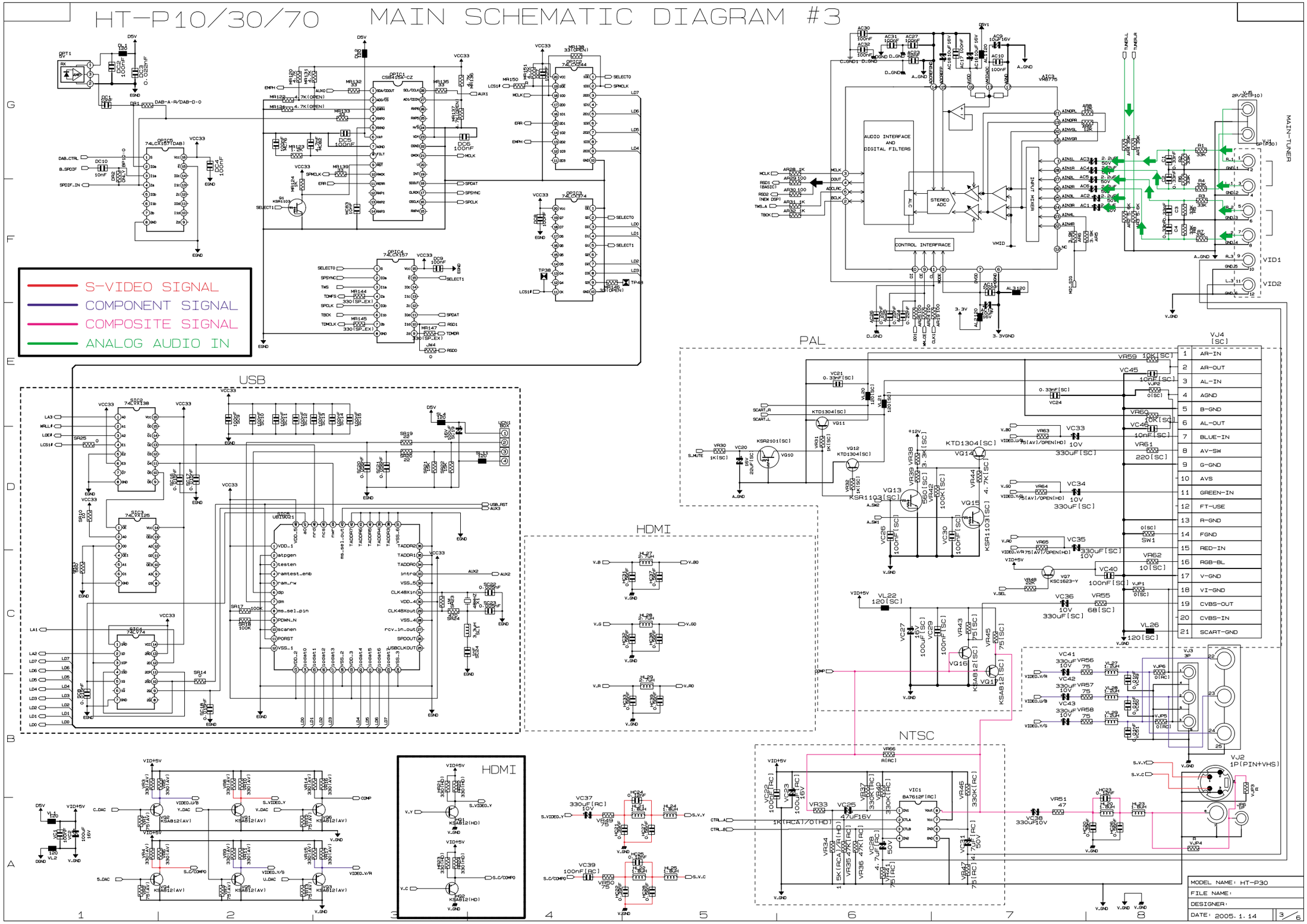

SPK1
SPK2
REV PR
CODE:AH41-00842A
HT-P10 MAIN PCB


AIC1
IC
MODULATOR
LRCLK
(Pin : #11)
BCLK
(Pin : #12)

1-1. MAIN (PART1)




HT-P10/30/70 MAIN SCHEMATIC DIAGRAM #2
MIC4
ES6698
HIC1
SAA7128
HDMI
EMULATOR SOCKET
CLOSE MICU
MODEL NAME: HT-P30
FILE NAME:
DESIGNER: CHOI MAN SU
DATE: 2005.1.14
2/6


HT-P10/30/70 MAIN SCHEMATIC DIAGRAM #3
S-VIDEO SIGNAL
COMPONENT SIGNAL
COMPOSITE SIGNAL
ANALOG AUDIO IN
USB
HDMI
PAL
NTSC
AUDIO INTERFACE AND DIGITAL FILTERS
STEREO ADC
CONTROL INTERFRACE
MAIN-TUNER
VJ4 [SC]
AR-IN
AR-OUT
AL-IN
AGND
B-GND
AL-OUT
BLUE-IN
AV-SW
G-GND
AVS
GREEN-IN
FT-USE
R-GND
FGND
RED-IN
RGB-BL
V-GND
VI-GND
CVBS-OUT
CVBS-IN
SCART-GND
MODEL NAME: HT-P30
FILE NAME:
DESIGNER:
DATE: 2005. 1. 14

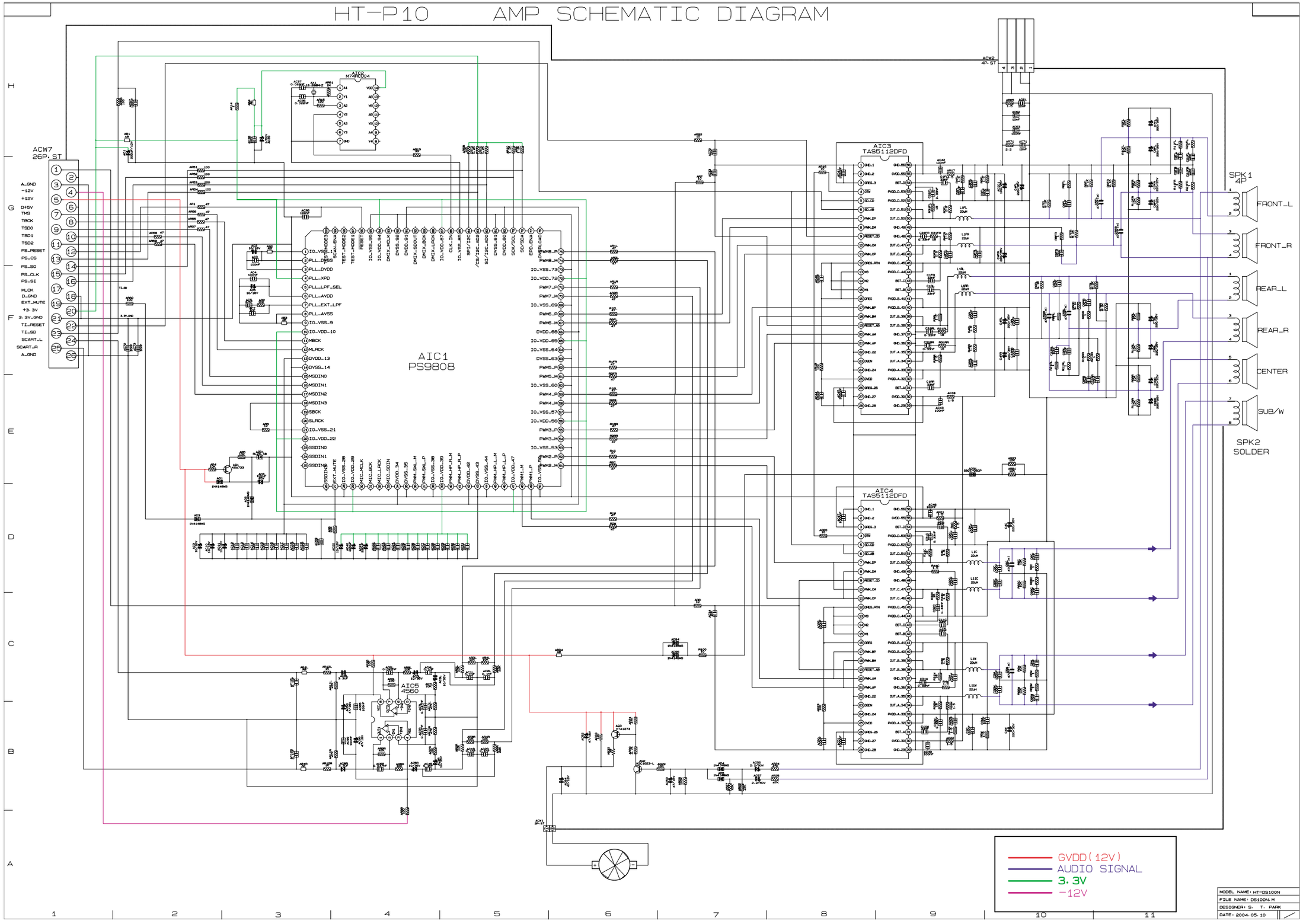
HT-P10/30/70 MAIN SCHEMATIC DIAGRAM #4

KP70/ KP30 KARAOKE MODEL OPTION

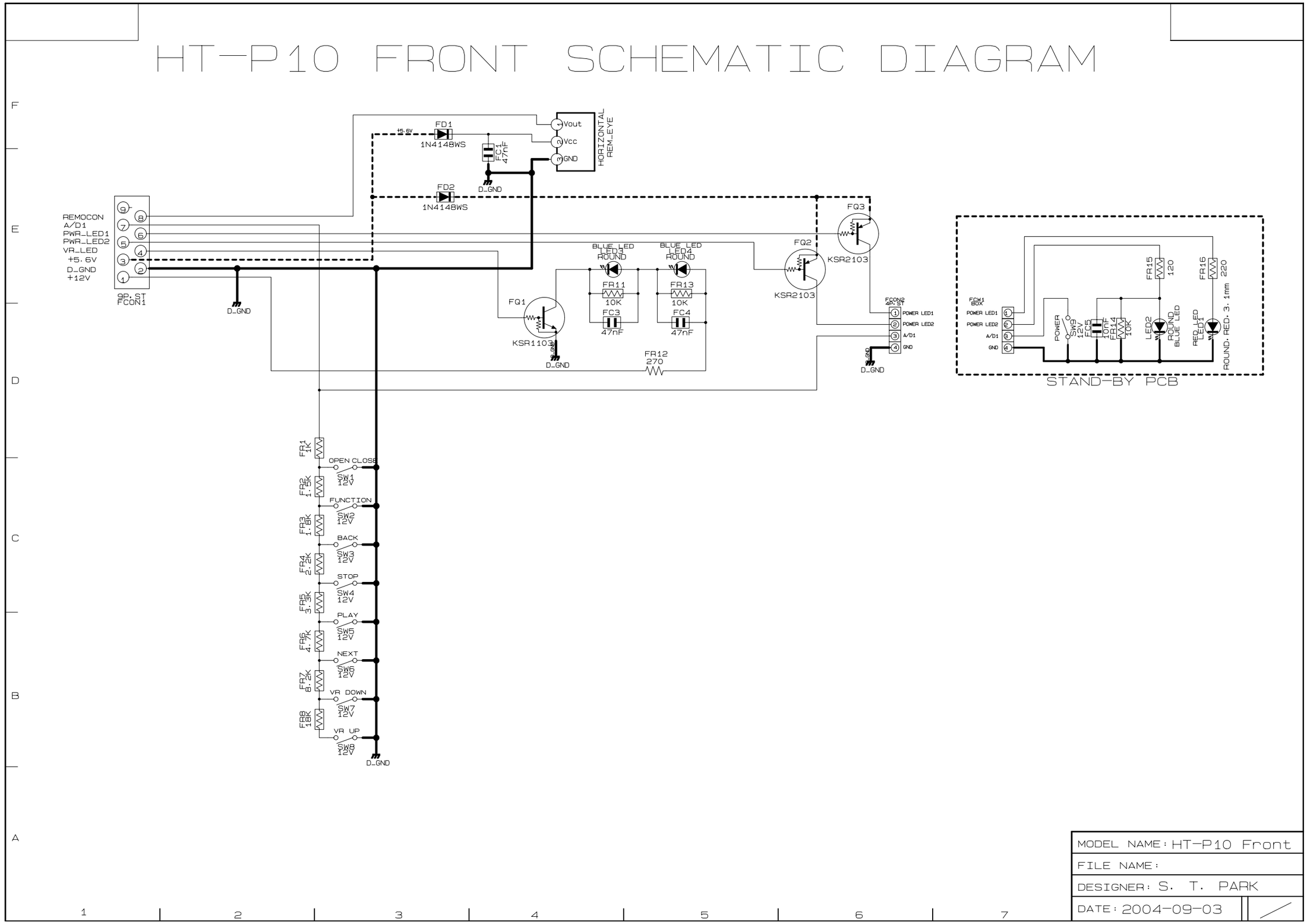
AUDIO SIGNAL

SCORE_OUT
D5V
KIC2 NJM2072M
KR1 15K
KR2 15K
KC1 220nF
KC2 100nF
KR3 0
KC4 10uF 16V
KR4 470
KC3 10nF
A_GND
KCON1 19P, SMD
DAC-CS
RESET#
MIDI_LO
A_GND
MIDI_RO
LA1
LD7
LD6
LD5
LD4
LD3
LD2
LD1
LD0
LOE#
WRLL#
LCS1#
DO1
CLK1
KCON2 7P
SCOR_ADC
W_SIG
MIC_SEN
12V
MIC_MUTE
W/SEN1
M_MUTE
KCON3 8P
ACTIVITY
W/SEN2
+12V
KR8 6.8K
KR9 470
KR7 470
KR6 6.8K
KC5 2.2uF 50V
KC6 2.2uF 50V
KC8 2.2uF 50V
KC7 2.2uF 50V
KIC1 VM8775
KR11 12K
KR12 16K
KR13 16K
AINOPL
AINOPR
AINVGL
AINVGR
AIN1L
AIN1R
AIN2L
AIN2R
AIN3L
AIN3R
AIN4L
AIN4R
NC
INPUT MIXER
VMID
STEREO ADC
ALC
AUDIO INTERFACE AND DIGITAL FILTERS
CONTROL INTERFRACE
MCLK
DOUT
ADCLRC
BCLK
KR16 100
KR19 100
KR17 100
KR18 100
KCON4 4P, ST
D_out
D_gnd
TWS
TBCK
DGND
KC10 100nF
KC12 16V10uF
KBD3 120
KC14 10uF 16V
KC15 100nF
KC16 10uF 16V
KC18 100nF
KC20 100nF
KC17 22nF
D1_GND
AGND
VMIDADC
AVDD
ADCREFP
ADCREFGND
KC11 100nF
DVDD
120KBD1
KC13 10uF 16V
3.3VGND
KBD2 120
3.3V
MODE
CL
CE
DI
KR14 100
KR15 100
KR13 100
KC19 22nF
KC21 22nF
KC22
KBD5 120
KBD4 120
GPIO(0)
KR5 33
KIC3 HCS201
KC9 100nF
KR10 33
GPIO(2)
EGND
DVD : LOW
MIDI : HIGH
VCC33
KR22 4.7K(OPEN)
KIC4 74LCX157(OPEN)
MIDI/DVD
TSD0
TSD1
TSD0#
TSD1#
KR24 0
KR23 0
KC23 100nF(OPEN)
CLK1
WM_CE/M
DO1

MODEL NAME: HT-P30	
FILE NAME:	
DESIGNER:	
DATE: 2005. 1. 14	4/6

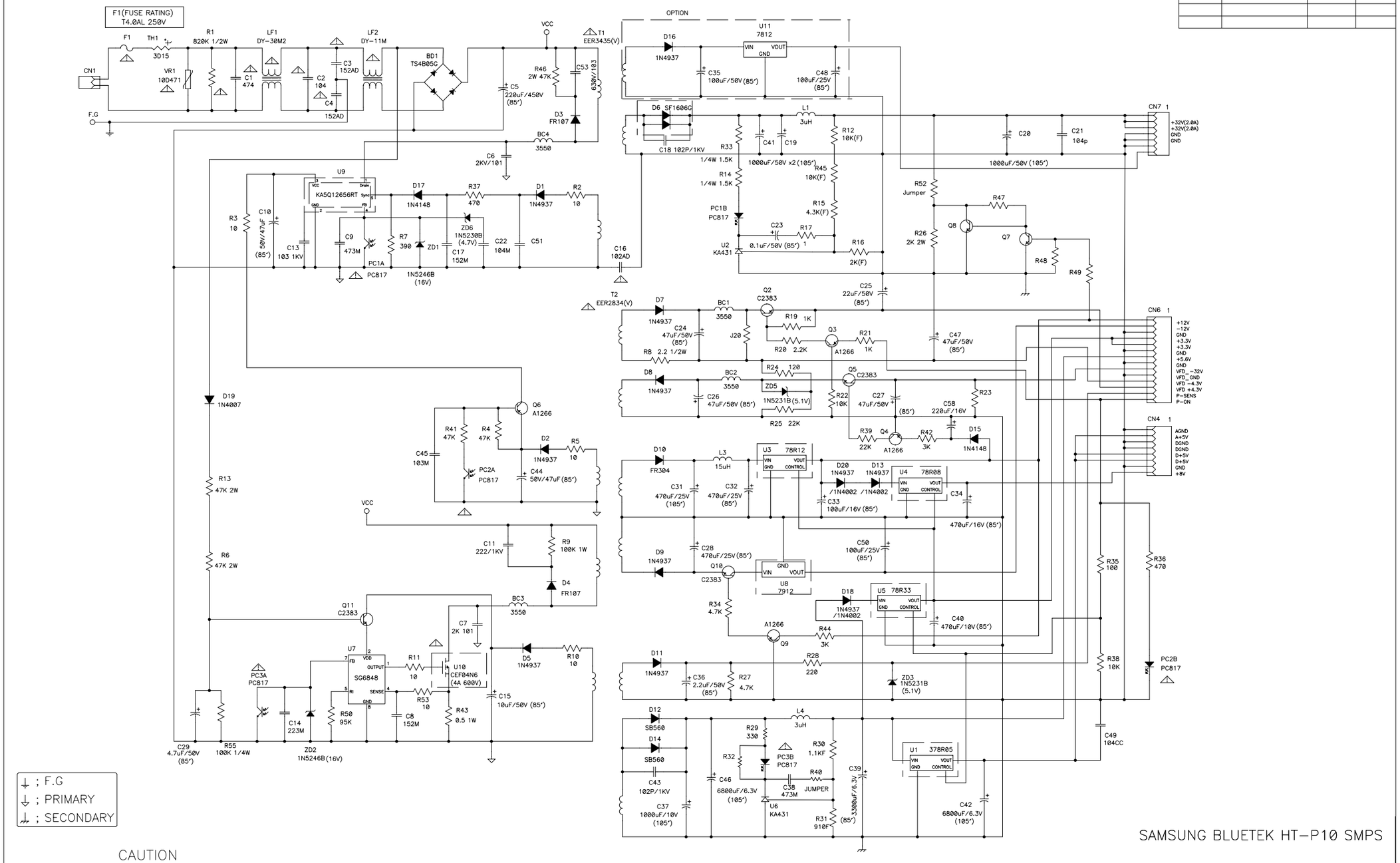

HT-P10 AMP SCHEMATIC DIAGRAM
ACW7 26P.ST
AIC1 PS9808
AIC2 M74HCD04
AIC3 TAS5112DFD
AIC4 TAS5112DFD
AIC5 4560
SPK1 4P
FRONT_L
FRONT_R
REAR_L
REAR_R
CENTER
SUB/W
SPK2 SOLDER
ACW2 4P.ST
GVDD(12V)
AUDIO SIGNAL
3.3V
-12V
MODEL NAME: HT-DS100N
FILE NAME: DS100N.M
DESIGNER: S. T. PARK
DATE: 2004.05.10

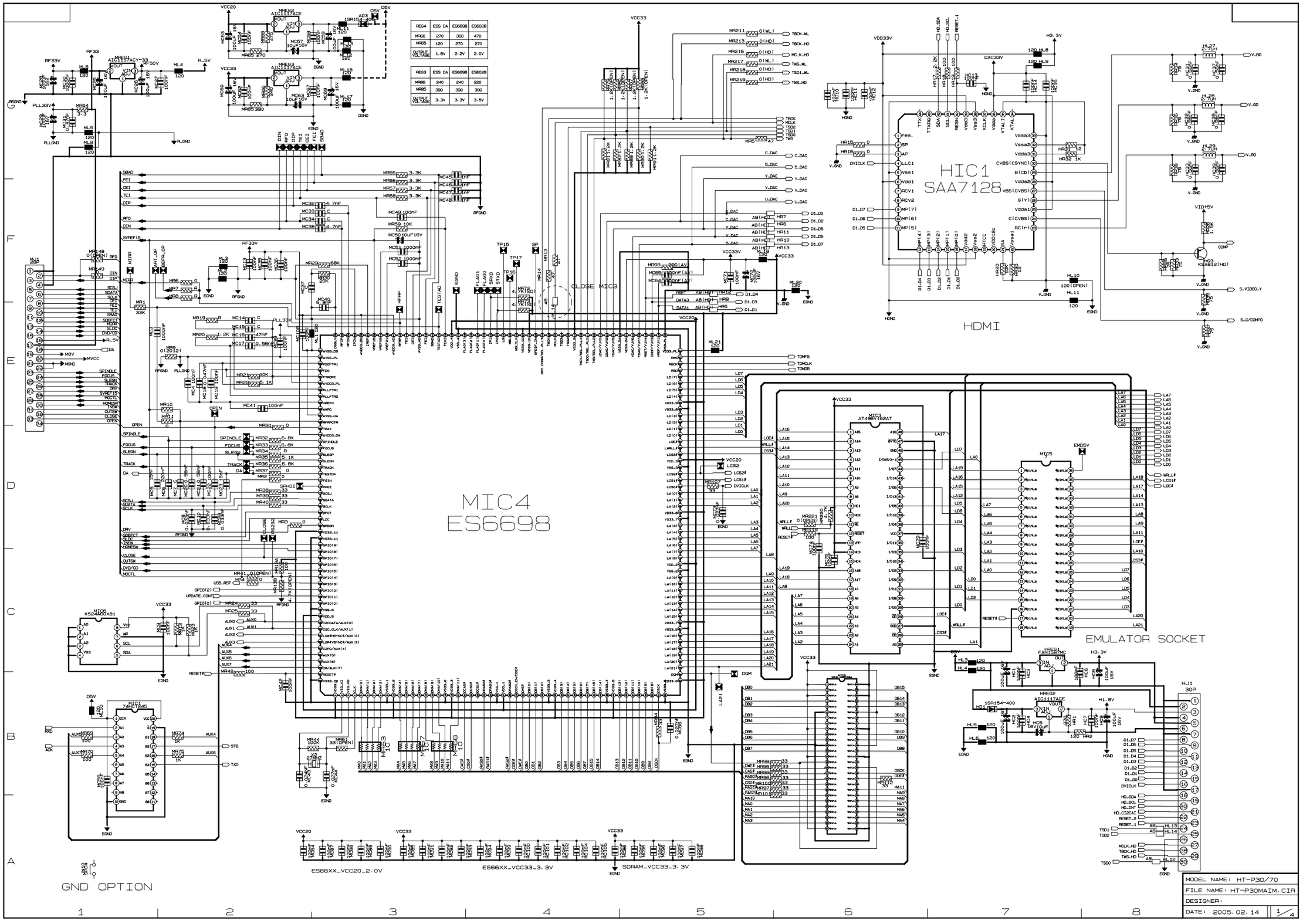
HT-P10 FRONT SCHEMATIC DIAGRAM

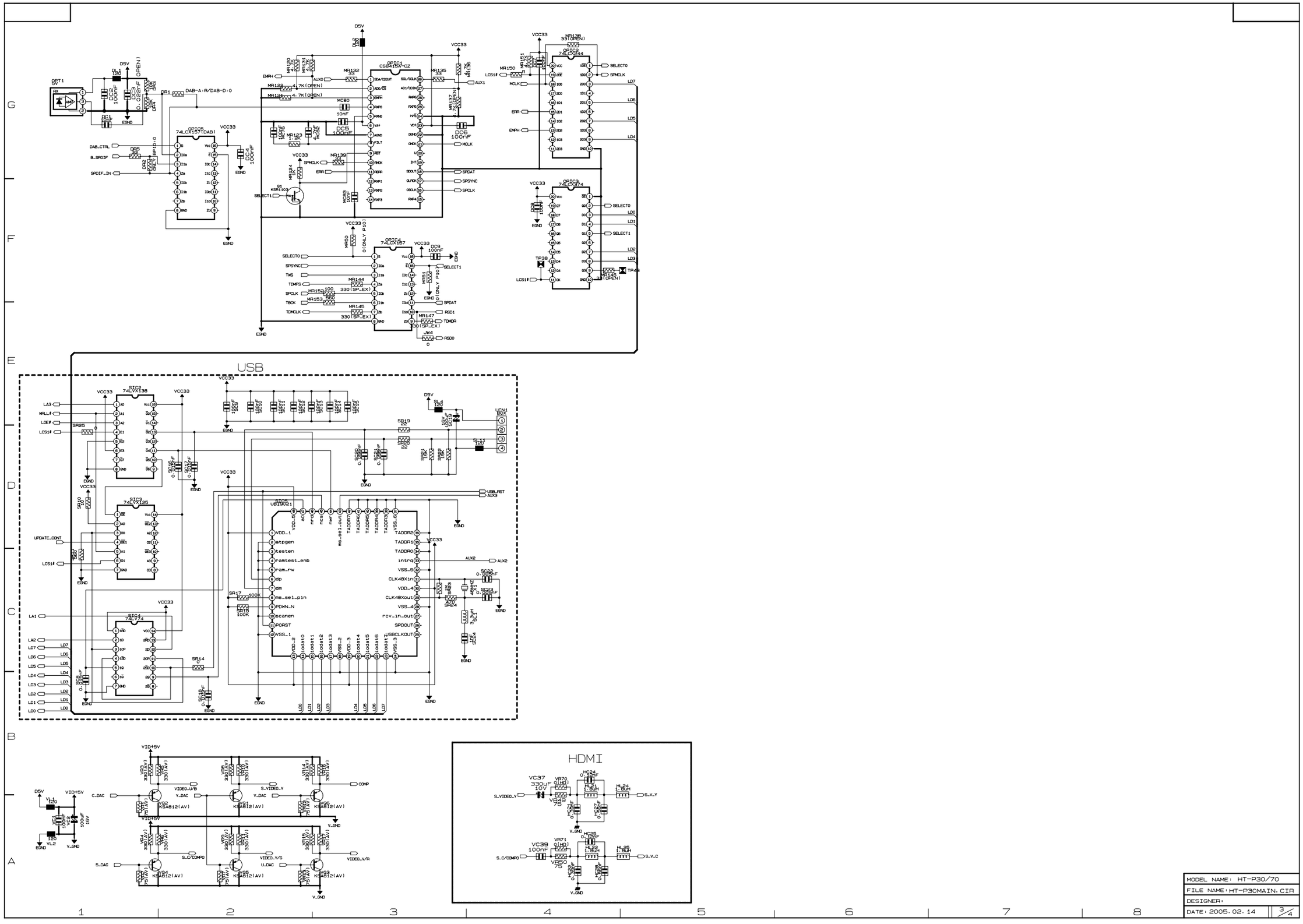


MODEL NAME:	HT-P10 Front
FILE NAME:	
DESIGNER:	S. T. PARK
DATE:	2004-09-03

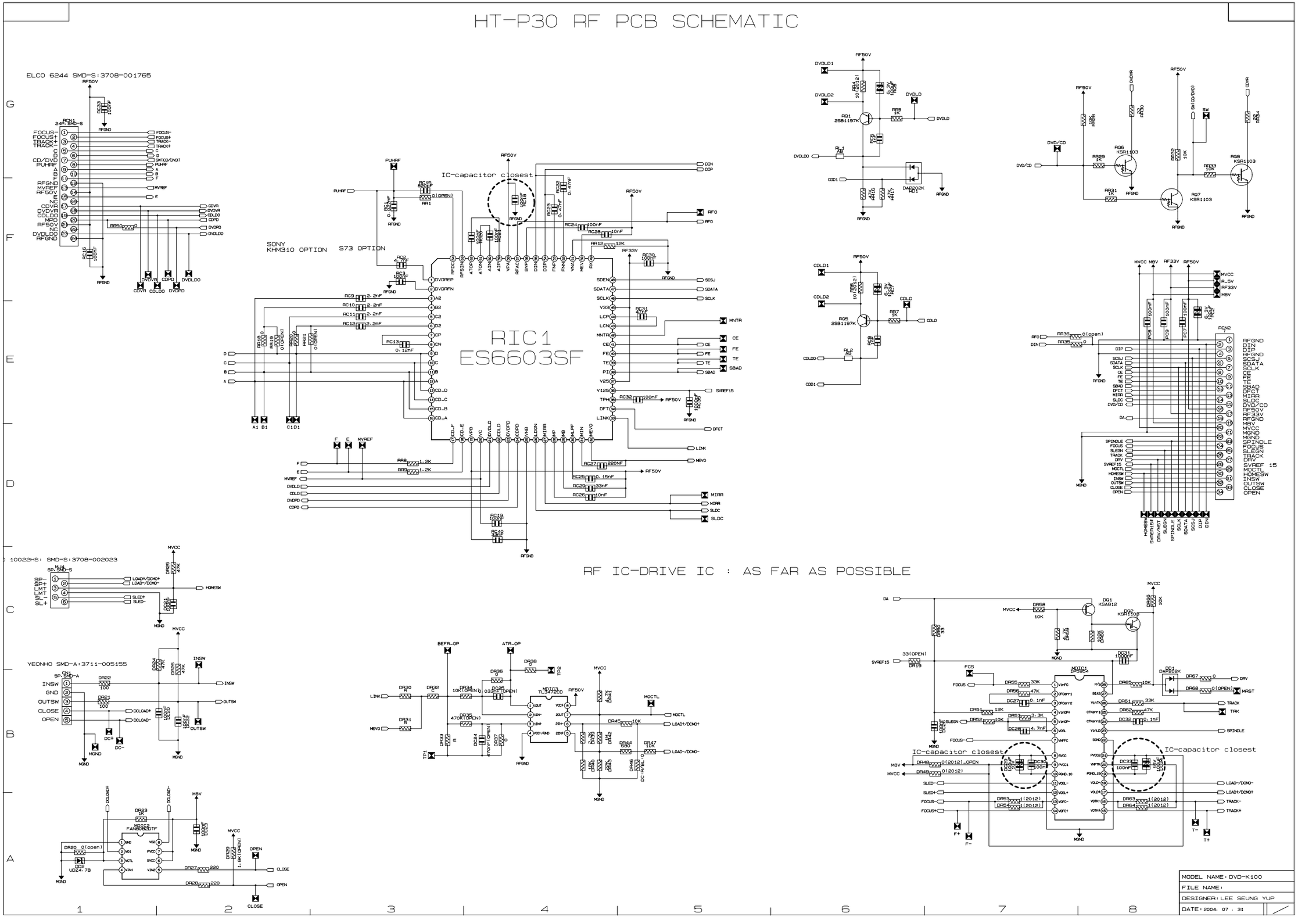
REVISION RECORD			
LTR	ECO NO :	APPROVED :	DATE :



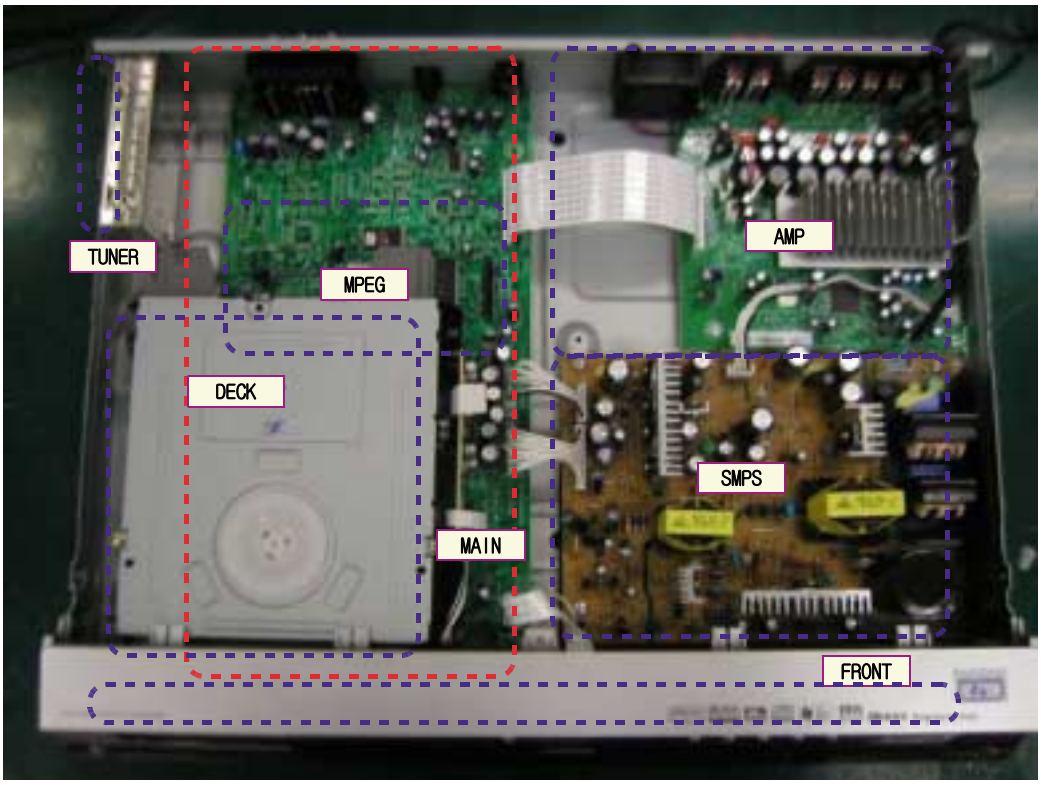

MIC4
ES6698
HIC1
SAA7128
HDMI
EMULATOR SOCKET
CLOSE MIC3
GND OPTION
ES66XX_VCC20_2.0V
ES66XX_VCC33_3.3V
SDRAM_VCC33_3.3V
MODEL NAME: HT-P30/70
FILE NAME: HT-P30MAIM.CIR
DESIGNER:
DATE: 2005.02.14


USB
HDMI
MODEL NAME: HT-P30/70
FILE NAME: HT-P30MAIN.CIR
DESIGNER:
DATE: 2005. 02. 14
3/4

HT-P30 RF PCB SCHEMATIC



13. Circuit Board Description



BLOCK Div.	Main Roles	Remarks
SMPS	◇ AC Power Supply and MICOM Supply - Power from AC-CORD is supplied to MAIN POWER TRANS through Protection circuit(FUSE, VARISTOR, etc.) of SMPS(STAND-BY status) - Approve operating voltage to MAIN SET from SMPS for normal operation on power-on while AC-CORD is inserted in outlet(STAND-BY). ◇ CONNECTOR Specification ① M8V : IC power operating OPEN/CLOSE and ROULETTE +/- of MECHA TRAY ② P-SENSE: Power-sense and port for detecting whether AC-CORD is inserted in outlet. MICON can recognize and POWER-ON at set only when this SENSE port is set to "H". (about +5V) ③ P/ON : POWER-ON port. When turning on power at set after recognizing P/SENSE at MICOM, this power supplies all powers to MAIN-PCB through operation of SMPS Q7(about +5V) ④ MICOM 5.6V : approve LOGIC operating power of MAIN MICOM and VFD DRIVER IC at STAND-BY status. RED LED is turned on(about +5.6V) ⑤ VP : NEGATIVE DRIVE power of VFD DRIVER(about -34V) ⑥ VFD DC : FILAMENT operating power of VFD(about +4.4V at both end during power-on ⑦ A5.6V : AD CONVERTER(WM8775) operating power ⑧ D5.6V : MECHA DIGITAL power	* 120V - FUSE(F1):6.3A - VARISTOR(VR1):10D221 * 240V - FUSE(F1):4A - VARISTOR(VR1):10D471

BLOCK Div.	Main Roles	Remarks
MAIN-PCB	◇ **MAIN MICOM Part** - 10MHz oscillator - CLK : share PS9818, WM8775, TUNER - DATA : share PS9818, WM8775, S5G5128A, TUNER ◇ **VFD and VFD DRIVER IC circuit** - VFD operating and LED operating - RED LED during Stand-by, BLUE LED during POWER-ON - Other AD circuit(SWITCH) composition ◇ **JACK Part** - Various VIDEO related CONTROL part - Input : AUDIO 1,2 / VIDEO 1,2 / DIGITAL IN - Output : COMPOSITE / COMPONENT(Y/Pb/Pr) / S-VIDEO / SCART, etc. ◇ **MPEG Part** - ES6688 - Implement DPL2, DTS, DD, DVD-AUDIO	
FRONT-PCB	◇ **FRONT PCB** Part Take charge of control of front panel such as REMOCON operating/ main unit KEY operating / HEADPHONE operating ◇ **HEAD PHONE MUTE Circuit** - 2 stage mute of HEAD PHONE SIGNAL at MODULATOR ◇ **VOLUME Circuit** - VOLUME BLUE LED during POWER-ON and DIMMER ON/OFF operation	

BLOCK Div.	Main Roles	Remarks
AMP-PCB	◇ **AMP Operating Part** - I^2S DATA from MPEG is entered to MODULATOR, and PWM OUT for each CHANNEL. Then, it is output in analog through AMP IC of FULL BRIDGE type and LPF. - TAS5111 : FR/RR,SW,FL/RL CHANNEL - TAS5112 : C CHANNEL ◇ **PROTECTION Circuit** - Each AMP IC detects abnormal operation, and delivers to TI-SD MICOM PORT (ACTIVE LOW) - PROTECTION operation type * SHORT CIRCUIT : short between SPK output +/- and short between SPK output and CHASSIS * OC(OVER CURRENT PROTECTION) : turning off big current at OUTPUT output * OT(OVER TEMPERATURE PROTECTION) : if IC JUNCTION temperature exceeds 155℃, it should not be over 125℃, but is not currently used. * UV(UNDER VOLTAGE PROTECTION) : should be maintained over UVP THRESHOLD ◇ **FAN Operating Part** - SIZE : 40x40x20mm - 1 stage operation: operate fan in one stage as 12V power is approved during power-on. (FAN operating voltage: about 6.5V, FAN SPEED : about MAX 2392Rpm) ◇ **ANYNET** - 74HC08(AND GATE) + MAX232(RECEIVER)	

1. Definition of Home Theater

What is Home Theater?

Home theater system is the proper combination of audio and video system at home which enable you to enjoy more dynamic sound and vivid image in a wide screen of movie theater.

This effect can be implemented with wide screen, high quality projector, Dolby digital and DTS sound effects.

Now you can enjoy surround sound field wieh realistic presence and Dolby digital at your home as if you are in a movie theater.

As time goes by, home theater system has become recognized as a system that helps listen sound closer to the original sound rather than video. In this 21st century, most movie and animation films will be produced for home theater and reproduce sound closer to original sound.

2. Concept of Sound

What is Sound Range?

People can listen to the sounds with frequency between 200Hz~20.000Hz

High	3,000Hz~20,000Hz	Highest sound (Ex– Woman's screaming, high sound of organ)
Middle	200Hz~3,000Hz	Most common sound in our daily lives (Ex– movie words, music)
Low	20Hz~200Hz	Lowest sound range that human can listen to (Ex– explosion sound, strong drum sound)

As time goes by, home theater system has become recognized as a system that helps listen sound closer to the original sound rather than video. In this 21st century, most movie and animation films will be produced for home theater and reproduce sound closer to original sound.

What is Sound Pressure?

* A measure of how well speaker converts electric signal it receives to sound
* Unit of sound pressure is decibel and mainly measures the size of sound at 1 m away after sending 1 W power from speaker.
  ❋ High sound pressure doesn't necessary mean good performance

What is Timbre?

* How well the unique sound of musical instrument is expressed
* Better if violin and cello sound are accurately distinguished. Good timbre means high quality.

2. Concept of Sound

By reproducing standard channels used during soundtrack recording of movie, it outputs 3 sounds of movie (words / music / sound effects) from 6 different speakers and provides surround dynamic sound effects so that you can even feel the direction of sound.

5.1 channel sound

5 channel

- Ⓐ Center Speaker : Voice (over 95%)
- Ⓑ Front Speaker (L/R) : Music Sound
- Ⓒ Rear Speaker (L/R) : Sound Effect

0.1 channel

- Ⓓ Subwoofer : Low Sound Effect

* Power amp is embedded in active sub woofer
* Require separate amp since there is no amp in passive sub woofer
  ❋ No difference in performance of active sub woofer and passive sub woofer

4. Home Theater Sound Format

Overview

* As home theater has recently penetrated deep into consumer's market in Korea, Dolby digital and DTS, the sound format for 5.1 channel home theater, are the mainstream in the market.
* Expanded type of 6.1 channel or 7.1 channel are recently released in the market, but there are not much DVD title that can support expanded type.

1958	**1Ch Mono/ 2Ch Stereo**
1982	**Matrix 3Ch Dolby Surround**
1987	**Matrix 4Ch Dolby Pro Logic**
1995	**5.1Ch Dolby Digital**
1997	**DTS (Digital Theater System)**
1999	**Matrix 6.1Ch Dolby Digital Sourround EX**

Home theater format...

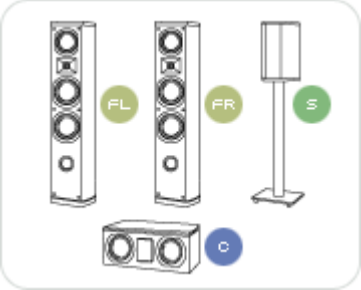
Stereo

Is used in general audio and analog TV and and consists of 2 channels, at front left/right

Dolby Surround

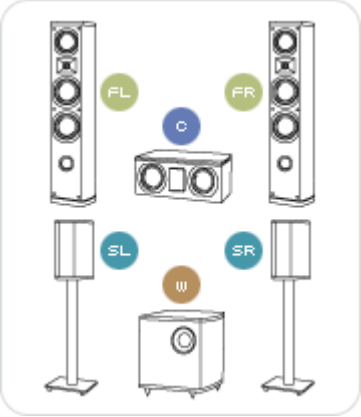
In this sound format, 4 audio channels (Front left / right / center / surround) are entered in 2 channel and reproduce in 4 channels through device with Dolby decoder.

Center channel is not completely separated so that it forms virtual center channel with help of front left / right channel.



Dolby Prologic

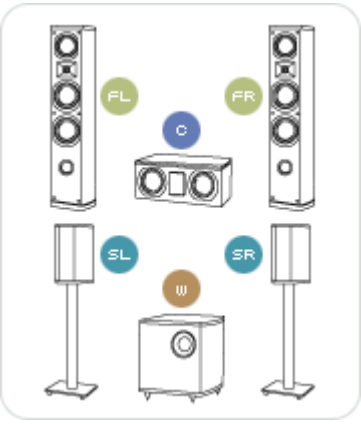
– Provide 4 channels (Front Left/Right/Center/Surround)
– Reinforced from Dolby Surround
① Center channel is completely separated
② Separation between channels gets higher



Dolby Digital

– Provide completely separate 5.1 channel
(Front Left/Right, Center, Rear Left/Right, Sub Woofer)
– Main sound format of home theater
– Reinforced from Dolby Prologic
– Rear surround left/right channels give different sound
– Support sub woofer reinforcing Bass

✻ Dolby Digital is also called AC-301
AC-3(Audo-Coding-3) : 3rd digital audio coding Dolby Research Center has developed.

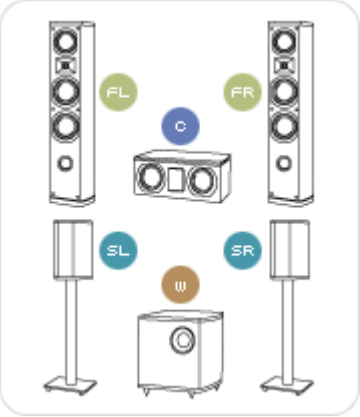


DTS(Digital Theater System)

– Technology of providing 5.1 channel sound, higher quality than Dolby Digital
– Home appliance produced to apply system installed at 1,800 theaters throughout the world.

✪ Comparison of DTS and Dolby Digital(DD)

SPEC	구분		설명
	DTS	DD	
S/N Ratio	High	Low	Signal to Noise ratio. The higher the S/N ratio, the clearer the sound gets
Compression	Low	High	Less compression of original sound results in less loss of reproduction and clearer sound.
Sound Separation	Big	Little	The bigger the sound separation, the clearer the sound from each speaker.
Transmission	Many	Few	The more information it transmits per second, the clearer the sound gets.



Dolby Prologic

– Latest technology reproducing music CD recorded in 2 channel, cassette tape and video tape made in Dolby Prologic into 5.1 channel.

– Surround speaker that makes you feel more natural, deeper and wider than existing Dolby Prologic.
(Ex-Profound sound adds more realistic presence from 5 speakers and sub woofer when you watch soccer match.)

DTS (Digital Theater System)

THX (Abbreviation of Tomlison Holman's Experiment)

– THX is not a sound format like a Dolby or DTS, but is a standard of sound. Like standard KS mark in Korea, THX means good certification in sound effects.

– THX issues certificate when a movie, theater or home theater system satisfy proper standards.

5. Home Theater Components

Display (Flat, Onjection, LCD, PDP TV, Projecter, etc.
DVD Receiver or DVD Player + AV Receiver
Speaker System (2EA)
Rear Speaker (2EA)
Center Speaker
Subwoofer

Amp / Receiver

Amp: Device of raising output after tuning signal of CD player or DVD into unique sound timbre

Various Types and Usages of Amplifier

- For Listening to Music ¡æ For Music+ Movie
- ① AV Receiver (Dedicated Lamp for Home Theater) : Preferred by Home Theater mania.
  ② DVD Receiver (DVD Player+ Amp+ Radio Tuner) : Suitable for beginner of Home Theater
- Many A/V companies adopt DVD receiver type for expansion of easy and economic Home Theater system.

Popular Korean Products

- Popular for those who pursue relatively good sound quality at low price
- Product priced between 400,000 won~600,000 won are popular.

Popular Foreign Products

– Popular for those who prefer profound sound volume/output(Hi-fi mania, Home Theater mania)
– Products in the range of middle and low price such as Denon, Yamaha, Onkyo (900,000~1.1 million won) are popular.
– There is very expensive product over 10 million won among foreign audio markers such as Merdian, Mcintosh, Krell.

Type of Amp/Receiver

* Pre Amp

A device that receives, adjusts and sends signal from source devices (tape deck, CD player, radio tuner, etc.) to power amplifier.

* Power Amp

A device that amplifies the signal from Pre Amp into big sound so that speaker can vibrate.

* Integrated Amp

A device that combines pre-amp and power amp into one.

* Receiver

A device that contains tuner for radio broadcasting and integrated amp.

A/V Receiver

General Amplifier
– Support 2 channels (Left, Right Speaker)
– Mainly reproduce music
– No decoder : cannot cope with various sound formats

A/V Receiver
– Support multi-channel (support 5.1 channel)
Launch products supporting 6.1 channel and 7.1 channel recently.
– Reproduce music and movie sound realistically
– Has decoder
Can cope with various sound formats such as Dolby Digital.

DTS
– Rich input/output
– Use digital signal type and has no sound

A/V Receiver

A device of implementing home theater more conveniently with radio and A/V receiver embeded in DVD player.

How to Select Amp/Receiver

- Select the products that can support both Dolby Digital and DTS since they require both for vivid sound

- Performance of amp gets better in output(W) but high output is a burden in narrow house.
- Important to match output(W) and capacity(§Ù) of amp and speaker.
- It is advantageous for beginners to purchase DVD receiver type that has amp and radio tuner in DVD player
- If the budget is tight, it is recommended to continue to upgrade after purchasing a low-priced system.

  * Computer will be of no use when it is outdated.
  * But, home theater system can be utilized in various ways due to feature of A/V device.

Speaker

Speaker system consists of speaker unit and enclosure.
The type and price range are diverse from expensive big speaker to miniature thin speaker.
Difference between famous speaker and big A/V speaker

- Speaker units are similar(there are a few several speaker unit makers in the world)
- Design, finishing, assembling and tuning process of enclosure are different.
  (Prestige speakers are made manually in whole processes of manufacturing)

Famous speaker brands: B&W, JBL, BOSE, Definitve, B&O, etc.

Tallboy Type

A speaker directly installed on the floor without separate speaker in the height of 90 ~ 120 cm.

Bookshelf Type

A small speaker that can be placed in bookshelf. Good for utilization of space since it can be mounted on the wall when installing home theater system in a narrow space.

Speaker Structure

Speaker Unit

- Divided into for high tone, middle tone and low tong
- Tweeter : for high pitch
  Smallest unit suitable for feature of high tone reproduction
- Mid-Range : for middle tone
  Mid sound reproduction ability is the most critical standard of speaker evaluation
- Woofer : for low tone
  Much bigger size than other speaker unit

Enclosure

- Case of speaker unit
- Enclosure sways sound quality of reproduction
- Low tone is almost acattered without enclosure, and only high sound tone is heard.

Type of Speaker System

Full Range Speaker

A speaker system producing sound with one speaker unit.

2 Way Type

A speaker system designed using units of 2 woofers for bass and tweeter for high tone.

3 Way Type

Difference between foreign prestige speaker and big A/V maker's speaker.